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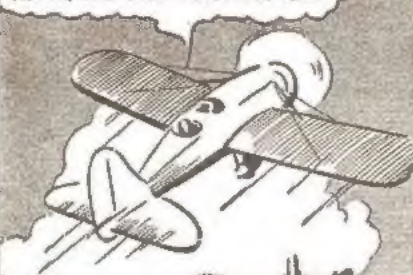
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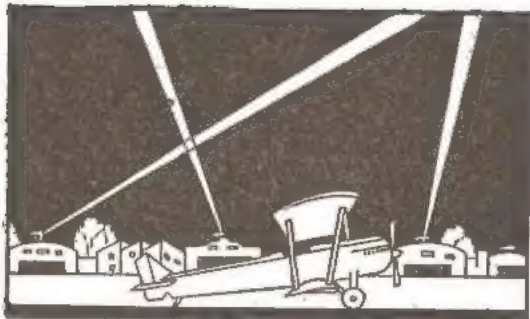
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**VOLUME XXVIII**

**MARCH, 1938**

**NUMBER 4**

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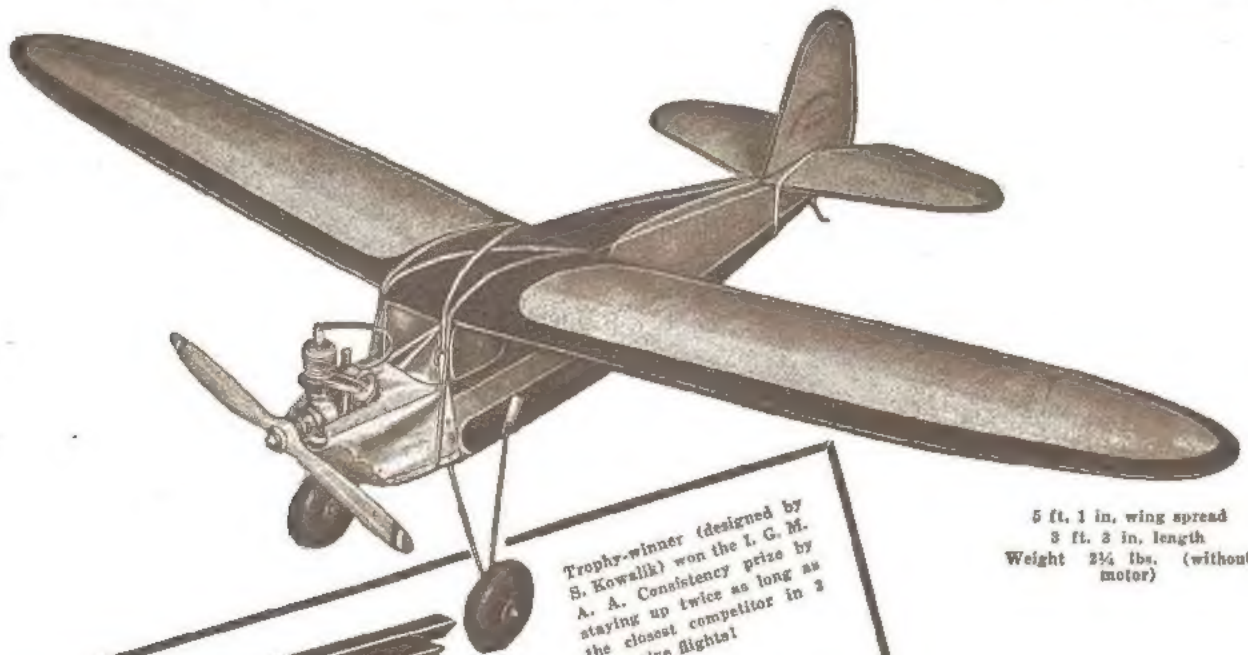
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Cover Painting by August Schomburg

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# Hell Hammers Harbin

By Donald E. Keyhoe

Author of "Headsman Strafe," "Aces of Death," etc.

## CHAPTER I

### WHITE DOOM

**F**ROM the tiny amplifier in the front cockpit of the speeding Northrop, there suddenly came whispered words: *Guam to Q . . . . Guam to Q—Range Three.*

Richard Knight bent over the special high-frequency radio, swiftly pressed a button marked "Three." There was a brief interval as the sealed black stratosphere plane droned on under a frozen moon, then the whispering voice spoke again on the new wave-length.

*Okay, Q . . . . Six, two, one . . . . six, two, one. Five, four, and twenty . . . . Five four, and twenty . . . . That's all for now.*

The bronzed American agent turned, looked back under the double Plexiglas enclosure to where Larry Doyle, former Marine Corps pilot, was fumbling with a map.

"Got that, Lothario? Longitude 126, latitude 45 degrees and twenty minutes."

Doyle grunted, switched on a cockpit light to augment the cheerless moonlight. A broken nose which had healed crookedly gave his homely face a lopsided look. He stared at the map, looked up at Knight.

"That puts us sixty miles southeast of Harbin—just

about over the railroad from Mukden. How do you feel?"

Knight smiled a trifle grimly. "There have been times when I've felt better," he admitted.

"Same here," muttered Doyle. "And to think four hours ago I was in the Cathay bar at Shanghai, with a bottle of Scotch and nothin' to worry about."

Knight gazed unseeingly over the wing of the Northrop, and down at the murk of massed clouds which hid the Japanese puppet state of Manchukuo. Then his glance came back to the silent radio.

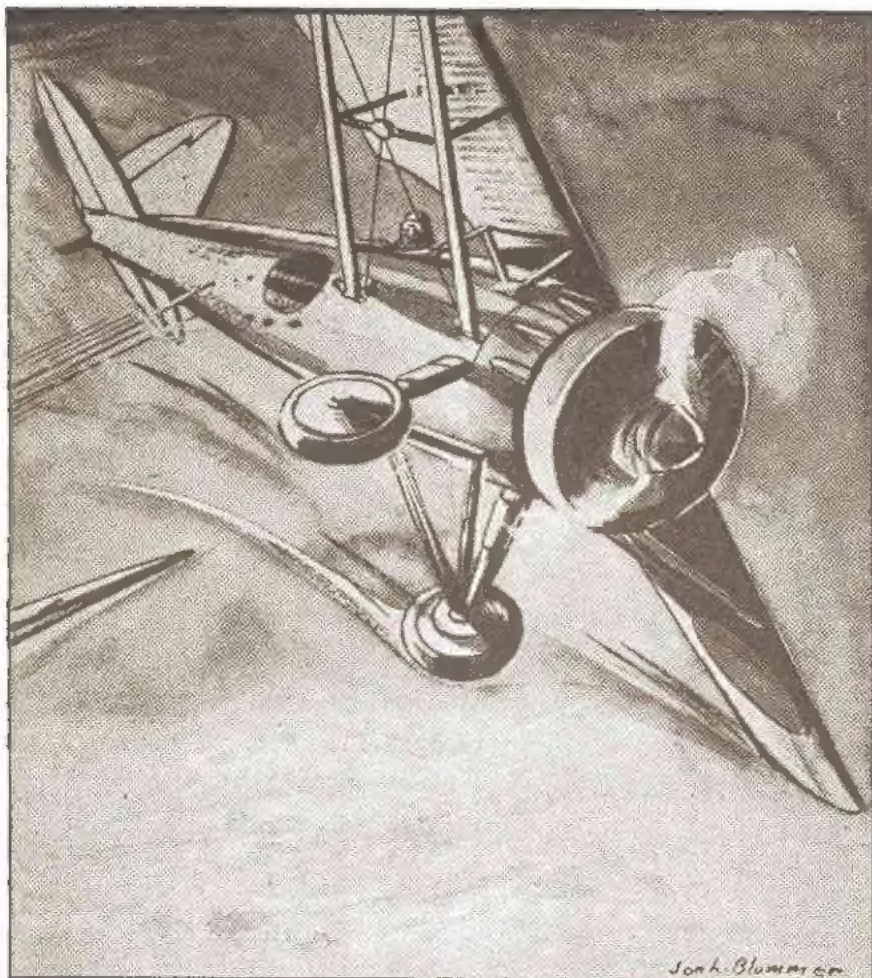
"If we only knew what it was all about, it wouldn't be so bad. General Brett must be pretty desperate to rush us up here with such sparse information, and especially to send you into a tight spot like this."

Doyle grimaced. "Yeah, I kinda wish I'd learned enough Jap lingo to get by. Nobody'd ever take me for a Jap, even if I made up like one. But if I got shoved in front of a firing squad I could tell 'em to go to hell so they'd understand it."

**K**NIGHT switched off the automatic pilot which, after their take-off from Shanghai, had guided their ship straight over the Yellow Sea and Chosen Bay into the heart of Manchukuo.

"If Brett's going to give us those last-minute orders





With a swift renversement, Knight hurled the Northrop at the first Nakajima as it plunged past the falling flare. But the other two 91's now charged in diagonally, concentrated a lethal crossfire upon the desperate American airmen.

he'd better hurry," he said to Doyle. "We'll be over Harbin in fifteen minutes."

"You sure that G-2 colonel got it straight—the message he gave us at Shanghai?"

"Positive. He said General Brett had rushed to Guam by Clipper with word for us to stand by when we came back from Macao. I saw the Guam message myself both in code and deciphered. It had our secret number, and Brett's the only one who knows it and the two key words before and after it. He said for us to fuel the Northrop to capacity for maximum altitude, to take off for Harbin, and then send 'Q' every ten minutes, alternating on our three high-frequency wave-lengths. He said the Guam station and the flagship at Manila would take bearings. Then Manila would radio their bearings to Guam, and the Guam operator would send us a 'fix' with the latitude and longitude figures backwards. The last sentence was 'Mission desperate, final instructions will be given on Range Two as you near goal; cruise to arrive between nine and nine-thirty.'"

"Arrive where?" growled Doyle. "I suppose we just squat down on the Harbin airport and tell th' Japs we're th' guys they've got a reward out for."

"Unless we get definite orders—"

Knight broke off as a strained voice sounded from the amplifier:

*B to Q . . . B to Q!*

"It's the general himself!" exclaimed Doyle. And the

came again, tense and vibrant:

*B to Q—a repeat. If clear, send number my Washington office. If not, reverse the number.* He went on with a quick and concise repetition of his peculiar message. As he finished, the Q-Agent took up his hand-mike and threw the transmitter switch. He gave the number of Brett's office, switched off the transmitter, and nosed the strato-plane downward.

"Listen, master-mind," said Doyle, "I can unscramble part of that dictionary omelet, but—"

"Remember Horace Greeley's advice, back in the '90's?" Knight interrupted. "He said 'Go West, young man'—and we're going to head West from Harbin. Seattle twist must mean northwest, and a Casey Jones line would be a railroad. There's a railroad running northwest from Harbin, so that fits. At a speed of three hundred, four minutes would cover twenty miles. Then we turn right and fly for ten miles. Either we fire a green Very star, or look for a green light on the ground to show us where to land."

"I got that—the pilgrims landing on Plymouth Rock," grunted Doyle. "But what about a Buddha havin' our number. Th' last Buddha idol you monkeyed with turned out to have a bird with a gas-bomb inside it."

"We'll have to figure that out after we land," said Knight. "The main thing is to come in over Harbin without any noise, or we're finished before we start. According to reports, there's a Japanese pursuit squad-

## QUESTION MARK OF DEATH

North! North! And still farther northward over those bleak wastes of Asia flew Dick Knight. His course was uncharted—his destination unknown even to himself! Only a question mark—a cryptic crimson question mark emblazoned on a rough Manchurian map—offered a clue to the mystery of that mad flight. And that puny clue was destined to be his single weapon against—hideous meteors of murder!

o o o

voice of the distant Intelligence general went on hastily:

*Do not answer now! Take advice Horace Greeley. Do not settle in city, but follow advice with Seattle twist and discover a Casey Jones line. With speed of three century notes, out from center four M's, then turn right cheek two M's and a very bright emerald will take pilgrims to Plymouth Rock. Prodigal sons take word of apparent Buddha who has their number.*

"Holy smoke—he's gone nuts!" howled Doyle.

"Give me the map!" Knight said tensely. Then, as he was gazing at it under the light, General Brett's voice



ron stationed at Harbin and the whole place is thick with troops."

"I still think Brett's gone screwy," Doyle said gloomily. "And we were twice as goofy to come up here."

"Switch off your light," said Knight. "We'll be down through those clouds in a few minutes."

THE twin-radial's thunder had faded to a muffled drone. Knight watched the altimeter hand sink from 35,000 to 30,000 and then drop steadily as the ship was swallowed up in the solid darkness of the clouds. The Northrop finally broke through the cloud-masses into snow-filled air. A vague blur of lights appeared ahead and slightly to the right. The Q-Agent swore under his breath. To locate the railroad, they would have to go lower than he had intended. He had not expected snow, but at least it was not heavy.

He closed the throttle completely, and the two-seater descended on faintly-moaning wings. Harbin began to take on shape through the snow flurries. He had visited the city briefly before the Japanese occupation, and now he began to recognize its salient points. The Pristan or wharf district lay almost dead ahead, its well-lighted streets leading up toward the plateau where New Harbin had been built. Holding the ship to its slowest possible glide, he reached for his high-powered field glasses which were held in a clip at one side. He was focussing them on the western part of the Pristan district trying to pick out the northwest railroad, when a queer, faint shriek sounded from up in the night.

He jerked his head back. High and to the north something was flashing down at the speed of a meteorite, leaving a glowing trail behind it. The shriek grew into a terrific screech, all in a second. He shoved the throttle open, whirled the Northrop into a tight renversement. There was a blur of luminous smoke at one side, then a blinding white flame leaped up at the edge of Old Harbin.

In amazement, Knight saw huge fragments of burning wreckage blasted two hundred feet in the air. Above the drone of the engine came a harsh, grinding roar. The weird white flame leaped up, then spread out like a gigantic mushroom. Beyond its edges he could dimly see tiny figures running frenziedly through the streets, away from where other less fortunate ones had been stricken down by the blast.

For an instant, that eerie spectacle held Knight paralyzed. The flaming mushroom was beginning to descend like a vast fountain of liquid fire. As it fell, great white tendrils of flame gushed out, setting nearby houses afire. One blazing tongue licked out for half a block, and a score of those tiny figures vanished in the white glare. Slowly the great tendrils faded, became white smoke, but where the main blast had been a holocaust was raging.

Knight tore his eyes away, stared back at Doyle. The homely ex-Marine was looking down in horror at the scene, and his face had a bloodless look in the ghastly brilliance.

"Dick!" he said hoarsely. "What in Heaven's name did it?"

Knight mutely shook his head. He had pulled up into a climbing turn, and as the shock of that weird disaster lessened he banked the ship westward. Whatever it was, it had increased their peril. The Nipponese were certain to link the catastrophe with the Northrop, which was

sure to have been seen as the strange white flame lit up the night. Intent on finding the northwest railroad, Knight held an altitude of about five thousand feet, with the radial at one-third throttle. Out of the maze of buildings and streets, he suddenly located the railroad station. He was swinging parallel with the tracks which led northwest when two anti-aircraft guns abruptly blazed beneath.

The Northrop rocked as one of the shells burst close to the left wing. He chandelled, ruddered back as other shells exploded furiously to his right. Motor now wide open, he zoomed up into the snowy night. The glare from the burning section was two miles behind, and he was nosing down to pick up the railroad again when a parachute flare blossomed out, a thousand feet above the sealed two-seater.

"Japs!" bellowed Doyle. He leaped up, snapping his gun-harness about his waist. Knight had instantly banked as the flare appeared. He shot a hasty glance upward. Three Nakajima 91's were diving steeply at the Northrop!

A half-muffled pounding came from behind him as Doyle flipped the twin 50-caliber guns upward in their airtight turret. The leading Nakajima whipped aside, its tracers smoking into space. Two red lines shot above Knight's head, ended on the left wing-tip. He felt the two-seater vibrate from the impact of the burst. With a swift renversement, he hurled the Northrop upon the first Nakajima as it plunged past the falling flare. His finger closed on the first of three buttons on the stick. Sliding flaps whirled open in the leading edge of the wing, and two hidden Browning .30's clattered into life.

The Japanese pilot cowered over his controls as the high-speed guns riddled his cowl. The Nakajima pitched on down, twisting to the left. Knight roared the Northrop after it, fingers taut on the stick-buttons, but the other two Nipponese fighters now charged in diagonally at the tail, concentrated a lethal crossfire upon the American low-wing. Doyle was swearing savagely as he whirled the rear .50's from side to side.

Knight bent over the stick, eyes glued to the special sights which his first burst had automatically raised from their niche in the cowl. A wing with a rising-sun insignia swam before his eyes. He squeezed a button, and the wing-root .50's, duplicates of Doyle's guns, blasted with a roar. A gaping hole appeared where the rising-sun symbol had been, and the Nipponese pilot frantically tried to bank on the uninjured wing. Knight slammed the two-seater around toward the nearer of the other Nakajimas. His spouting guns were almost centered on the ship when Doyle gave a shout of dismay.

"Watch out—that first Jap!"

KNIGHT jerked around in his seat. The pilot of the crippled ship was trying to ram the Northrop broadside. He snapped the controls back, and the bullet-torn fighter plunged underneath. With a crazy chandelle, the brown-faced pilot cut back. The other Nakajimas spread out hastily, Doyle unloosed a fierce barrage at the one on his right, and the pilot flung into a vertical bank. Knight kicked away from the crippled plane, then went rigid. The third Nakajima had renversed at the same instant, was racing at him head-on!

Thin streaks of fire lanced from the fighter's cowl. Knight booted his rudder. The Northrop skidded to the left, its nose swinging toward the Nakajima. He clamped the top stick-button, and with a roar all four wing-guns flamed.

Like cardboard, the right wing of the fighter sheared off, and the grinding guns ate their way through the uptilted tail. As Knight pitched the two-seater clear, the wrecked ship fell on its side. It plummeted a hundred feet, tore off the other wing, and the pilot was catapulted





into the air like a human ball. White silk flapped upward, spread out into a dome—only to collapse as the shattered wing struck it in the center. With chute and wing tangled above him, the doomed Nipponese fell swiftly away and was lost from view.

The drifting flare was by now only a short distance above the battling ships. Knight banked tightly to escape from the lighted space. Doyle's .50's hammered again, and as the two-seater pulled up beyond the flare Knight saw one of the remaining Nakajimas go whirling down in flames. The third Japanese pilot came furiously after the two Americans. Doyle raked the fighter's turtleback, swung his guns for another blast as the Nakajima went into an Immelmann. Knight leveled out with the compass pointing northwest. The two-seater was a mile away from the flare with the Nakajima lost in the snowy gloom, when another weird white flame mushroomed up from a spot near the Harbin airport.

Knight stiffened. Against that uncanny brilliance, six more Nakajimas were silhouetted less than half a mile across the sky. The Japanese planes were flying toward them, and before he could more than start a turn the fighters' guns were pounding, the six ships spreading out to hem them in.

Doyle pumped a fusillade at the first Nakajima, madly spun the gun-turret to rake another Nipponese. Knight stood the two-seater on its tail, and the superior speed of the ship carried it above the storm of leaden death.

With a lightning turn, he now pitched back at the zooming fighters. A fast-climbing Nakajima plunged back with its prop shot off. Knight rocked the rudder pedals, all four guns throbbing. Another Nipponese fighter swerved too late, flew straight into that deadly stream. Its fuselage broke in two, leaving shattered wreckage forward of the cockpit, and the luckless pilot clawed frenziedly to free himself from the smoking front section. Oily smoke enveloped him, became an inferno that further lit up the snow-lined sky.

With a vengeful fury, the rest of the Japanese pilots charged in at the Northrop. Guns from three directions gouged at the two-seater's tail. Knight flung the ship into a fast half-roll, changed direction. Two Nakajimas loomed ahead, diving in from right and left. He kicked to catch one of them under the guns. The other was within sixty yards, and two more Japanese were darting in from the sides. Just then three bullet-nosed Soviet fighters dropped headlong into the battle. One Nakajima spun off with a crumpled wing as the first Red pilot struck. Knight had a swift glimpse of the first Soviet plane. It was a 2KB-19, gray save for the huge red stars on its wings and tail. Two guns were spitting from mounts above the Rolls Royce Kestrel engine, and two more from the wing-stubs.

The other Red fighters pounced on the startled Nipponese, and another Nakajima went whirling to earth, snowflakes eddying wildly after it. Knight pointed the two-seater for a hole between two ships. The Northrop was almost through the opening when one of the Soviet pilots ruddered alongside.

Under the transparent enclosure, the man's fur-clad figure resembled a crouching bear. Knight saw him lift his right hand, then a cockpit light flashed on. The pilot swiftly threw back the hood of his fur parka, jerked open the heavy garment. Knight started. The man wore the yellow robe and cowl of a Buddhist monk!

## CHAPTER II

### THE SIGN OF THE FOUR FACES

NOW the Northrop and the 2KB raced on side by side, leaving the last Japanese to the grim mercies of the other Soviet pilots. The man in the yellow robe

flung a look down at his compass, then gazed back at Knight and Doyle. He lifted his hand again, crossed two fingers, hurriedly showed all five, then two.

"X-52!" shouted Doyle. "That's your new code number, Dick!"

Knight nodded hastily to the man in the Russian plane. As quickly as he had given the first code, the pilot gave Doyle's recognition number. Knight stared at the face the cockpit light showed. The man's features were massive, with dark, deep-set eyes under a towering forehead. Heavy black brows met above a huge, hooked nose. And a zigzag scar—white against his left cheek—ran from his temple to his chin.

As the monk-pilot finished Doyle's number he looked anxiously back toward Harbin, then gestured for Knight to swing in behind the fighter. The secret agent eased his throttle, dropped back but kept slightly above to avoid the 2KB's slipstream. He took a swift glance rearward. Searchlights were vainly probing through the falling snow. He could see a whitish glow near the airport, and another glow the color of normal flame where the buildings in Old Harbin were burning. There was no sign of pursuing ships.



He turned back to the controls. The Soviet fighter was nosing down, its lighted cockpit clearly visible against the snowy gloom. In a moment the cockpit light went out and landing-lights near the wing-tips flung two bright beams downward. Knight followed as the 2KB leveled out above a railroad. The rails and ice-covered telegraph poles swept by underneath, then suddenly the mysterious pilot wagged his wings and banked to the right. In less than two minutes a crescent-shaped clearing in the heart of the birch and larch woods became visible under the fighter's tilted lights. Knight switched on his own landing-lights, made a wider circle as the Soviet plane started to land.

At first he saw only the icy desolation of a Manchukuan woodland, then back under the trees on one side he glimpsed a log hut. Smoke came from its chimney. The 2KB sideslipped over the trees on the opposite side from the hut, leveled off, then came to a quick stop on the snow-covered ground.

Knight looked back at Doyle. "Here go the prodigal sons, Lothario. Sit down and fasten your belt—I don't like the looks of that field."

"And I don't like any of this business," Doyle retorted. "Who the devil do you suppose that bird is?"

"He's the Buddha who's got our number," Knight said drily, as he lowered the landing-gear.

"Yeah—and maybe those Japs back there have got it, too."

"They couldn't see where we went," replied Knight. "Anyway, we have enough fuel left to reach Vladivostok if things get too hot."

He dipped the Northrop into a forward slip, and the ship moaned down over the trees. Through the slanting lines of snow he saw a number of wheel-tracks in the white crust below. They were only half obliterated by the falling flakes. He looked around quickly for another ship, but he saw none. The tracks curved back toward the hut, then out again. Carefully, he brought the nose up and held the two-seater clear until he was exactly over the spot where the 2KB had landed. The Northrop rumbled across a hummock, bounced, slowed to a stop with a flurry of prop-whirled snow. He stood on one brake, taxied in beside the Soviet fighter, and pivoted to



swing the ship around into a take-off position.

Then he unlocked the gear which kept the cockpit sealed, and Doyle slid the Plexiglas dome back. A blast of icy air blew into the cockpit. Just as Knight cut off the engine the pilot of the 2KB reached the side of the Northrop.

"Switch off your lights," he said in English. His voice was deep, unhurried. "One of those Japs might still be looking for us."

Knight turned on his shielded cockpit light before switching off the others. The faint rays shone on the upturned face in the parka hood. At close range, the man's features proved even larger than they had seemed at first, and Knight knew that some glandular disorder must have brought about that strange abnormal growth.

The man's dark eyes flicked to Doyle, then back to the senior agent.

"You are Richard Knight?"

Knight nodded guardedly.

The monk-pilot smiled. "All this must seem very peculiar, I know. I'm John Creele, of British Military Intelligence. My government has instructed me to place myself at your service. But I'll explain inside—you're probably half-frozen."

"No, the cockpit was heated," said Knight, "but I'll admit you've some chilly air up here."

"Come into the hut," said Creele. "Better cover over your pit—it looks like a blizzard coming on."

**A**FTER locking the ignition circuit, Knight turned off the light and slid the Plexiglas shut. Doyle had introduced himself, and he and Creele were talking as Knight jumped down.

"Why, no," he heard the pseudo-monk say in a tone of surprise. "I thought you might enlighten me on that. I supposed they might in some way be connected with your mission up here."

"What's this?" asked Knight.

"I was asking about those queer explosions we saw," grunted Doyle. "I thought they were incendiary shells."

"They couldn't have been shells," said Creele as he led the way to the hut. "It's two hundred and fifty miles to the nearest border, and I don't know of any long-range gun that could send projectiles half that distance."

"What about the possibility of Soviet bombers?" queried Knight.

Creele shook his massive head. "I think I'd have known about that. I've been working closely with the Red air force lately, as you may have guessed from seeing my ship and the other 2KB's."

They had reached the hut, and now Creele lifted the heavy wooden bar which held the door closed. The wind sent snow-flurries in after them, then the hooded agent leaned against the door and dropped an inner bar in place.

Knight turned, shot a glance about the hut as he unfastened his flying-coat. A log was smoldering in the fireplace, and its dim embers cast a faint, fitful glow through the room. It was scantily furnished with a crude table, a bed, and two chairs. A tarnished gilt image of Buddha stood on the table, beside some greasy dishes. A large, dirty bear-skin rug covered most of the floor.

"Pardon the filth," rumbled the false monk. "All this is necessary—in case the Japs should get inquisitive. I'm supposed to be a White Russian who became disgusted with life after the revolution and became a fol-

lower of Buddha. I've been playing the part for a long time, but even yet they watch me occasionally," he said as he lit a candle and went over to toss another log on the fire.

Knight waited until he turned, then spoke up. "I don't understand your connection with General Brett. Is he working through Britain?"

Creele's heavy black brows went up with an astonished expression. "But that's just what I was going to ask you!" he replied. "I've been wondering about the meaning of my orders to cooperate with you."

"Then you don't know why we were sent here?" exclaimed Knight.

"No," said Creele blankly. "Don't you?"

"I haven't the slightest idea," said Knight. He and the pseudo-monk stared at each other. Doyle broke the silence with a groan.

"I knew it was screwy all the time. We've been framed!"

Consternation came into Creele's scarred face.

"Then they must be onto me, too! But how—"

"Wait," Knight said with a forced calmness, "we'll have to figure this out. When did you first hear about our coming here, and how did you get word?"

Creele hesitated, a look of vague suspicion in his eyes. Then he shook his huge head.

"London vouched for you—so you must be all right."

He unbarred the door, peered out, shut the door again and kicked back the bearskin rug. A neatly fitting trap-door was revealed. He pulled at the recessed handle and lifted the trap. Warm air came up from the dark space below. He took the candle, motioned the two Americans to follow. A basement twice the size of the hut became visible, fitted with a comfortable bed, a well-provisioned food locker, book-shelves, a large wardrobe cabinet, and other furnishings in decided contrast to the room above. A cheerful fire was crackling on a hearth directly below the fireplace in the hut. Knight saw an air duct from outside. It opened near the fireplace so that the draft would draw fresh air into the basement. At the opposite end of the chamber was a radio receiving set operated from a storage battery. A chart on the wall indicated various hours for listening-in on London, Singapore, Hong Kong and other official British short-wave stations.

"That's how I received word about you," said Creele. "It was relayed through our Hong Kong station," he added as he lighted a gasoline-pressure lamp and blew out the candle.

"This is some layout," said Doyle.

The other man laughed with a trace of harshness.

"And it might put me in front of a firing-squad if the Japs ever saw it. But I've prepared for escape, if it ever comes to that." He pointed to the food locker. "It's hinged against the wall, and there's a passage behind it leading to a hidden exit in the woods. At least I'd have a fighting chance."

"It must have been a job, doing all this alone," said Knight, his gaze traversing the room.

"I had two Russians helping me at first," replied Creele. "But that was several years ago. I've gone it alone since then, except when Soviet pilots dropped in here or one of my spies brought me a new battery or supplies."

**T**HE American agent lighted a cigarette, stood with his back to the fireplace. "We'd better get on to our problem. Exactly what do you know about our coming here?"

Creele tossed his parka on the bed, threw back the cowl of his yellow robe. His huge fingers absently rubbed his shaved head as he answered.

"The first message came early this morning. It was

(Continued on page 84)

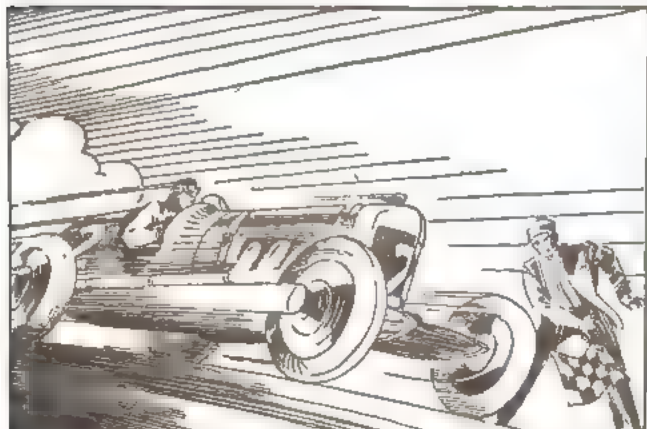




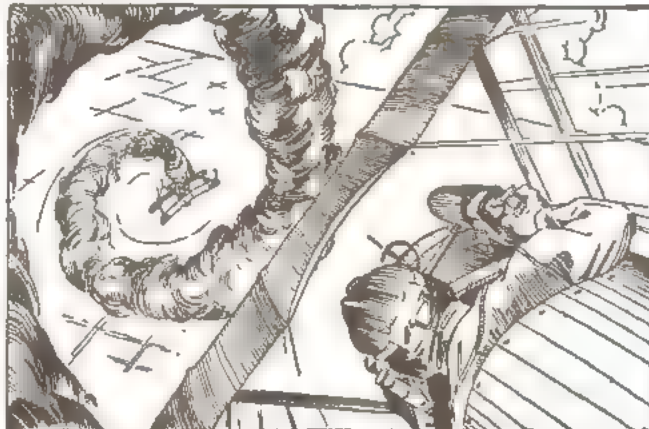
# They Had What It Takes

## XIV—EDDIE RICKENBACKER—OUR ACE OF ACES

By ALDEN McWILLIAMS



1—Born in Columbus, Ohio, in 1890, Edward Vernon Rickenbacker quickly developed an interest in mechanics. After taking correspondence courses in engineering, he received auto training with the Frayer-Miller Car Company; then from 1910 to 1917 he led a daredevil life as a racing driver. He had just contracted to compete in England when the War broke out.



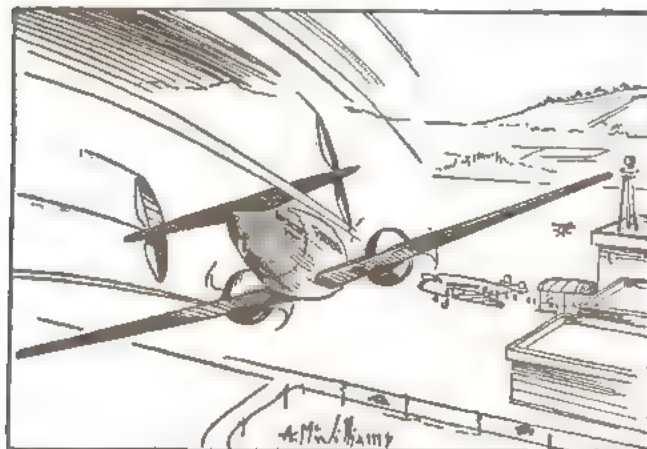
2—Enlisting immediately, Eddie forthwith was made a sergeant and was assigned as one of Pershing's chauffeurs. Soon, however, he transferred to the Air Corps at Tours, and from there he went to Issoudun with the rank of Lieutenant. Then as Captain commanding the 94th Squadron, he repeatedly led his flyers in successful sky sorties against the crack German Staffels.



3—The War ended with Rick famed as our leading Ace—for he was officially credited with 25 victories! Returning home, the great airman wrote that dramatic book, *Fighting the Flying Circus*. Next, he produced the Rickenbacker motor car; and the fact that he used the 94th's Hat-In-The-Ring insignia for a trade-mark proved that aviation was still in his heart.



4—Later he went over with the Cadillac company, where he was put in charge of the La Salle Division. By this time, though, Eddie could not repress his old yen for the air any longer. And so it was that he left the automotive industry and went back into aeronautics, first becoming associated with the General Aviation Manufacturing Corporation as Vice President.



5—Then, in 1932, the renowned Ace switched over to the air transport field when he joined American Airways as Vice President. He continued in this capacity until 1935 when he went with Eastern Air Lines, operator of the celebrated 80-minute New York-Washington passenger service, as General Manager. It is this position which Eddie Rickenbacker now holds.



6—Distinguished as our outstanding War Ace, Rickenbacker has been awarded the Congressional Medal of Honor and the D.S.C. with nine Oak Leaves. Moreover, France has bestowed upon him the Croix de Guerre with four Palms and has named him to her Legion of Honor. His fame deservedly lives on—and he still "flies in the fore" as one of our top-rank aero leaders.





# If War Strikes Tomorrow

• • •

**WAR!** It can strike us tomorrow! The headlines tell the story—that not since the World War has the United States faced such a national crisis as that which has now reared its ugly head. It is senseless to attempt to ignore the facts, because the most optimistic interpretation of the sinister "incidents" across the Pacific still presents the stark threat of conflict.

Nor is it necessary any longer to hide the identity of the nation which menaces us under that time-honored smoke-screen phraseology—"an Asiatic power." Japan has stacked the deck, drawn her cards, and shoved her chips forward. Thus far, the United States has played safe—but it may be only a question of time before we shall be called upon to meet the ante or throw in our cards.

It has been the continued success of the military and naval forces of Nippon since 1932 that has given Japan her unbelievable boost in national prestige, confidence,

and blatant cockiness. Compared with the Jingoos of Japan, the frowning tub-thumping dictators of Europe are mere schoolyard bullies; for in that group Japan has the edge in nerve. Certainly no other nation today would dare insult the two greatest naval powers in the history of the world not once, but a dozen times within the space of a few short weeks—and get away with it. We grant that her hopes of success may be hard to fathom. But no sane observer can deny her challenge.

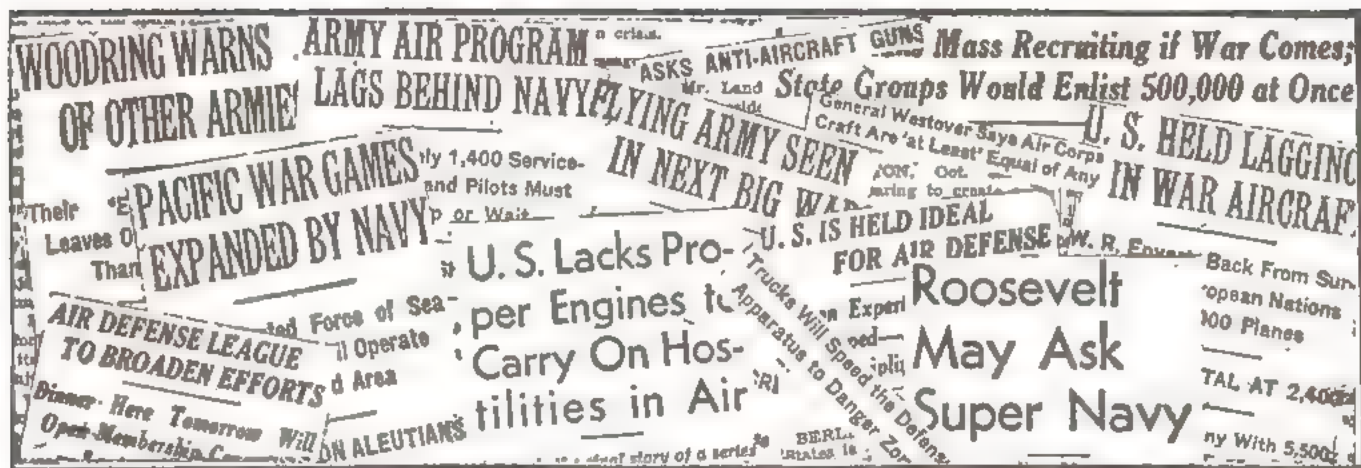
And so, the United States is at the very edge of that Maelstrom—a grim war in the Pacific. Whether the match will be dropped in the powder keg tomorrow, within a month, or next year—no man on this side of the Pacific can say. We have no yardstick to calculate by; indeed wars cannot be predicted with any degree of accuracy. But surely we must not try to judge the possibilities by the events of 1914-18. That past history cannot be transplanted into these days of 1938—for a great Pacific war would in no way resemble the Great War of twenty years ago. The methods that brought us successes on the Marne, Somme, above the Argonne, or on the North Sea might bring us defeats at Guam, Hawaii, or the Canal Zone.

Though the stage is set, no man can tell when, or if, the curtain will rise on the bloody drama. But we must ever be calculating our chances for ultimate victory. First off, early set-backs in the western portion of the Pacific are highly likely—for there Japan is strong and we would be operating far from our own shores. That in itself would make for a long and strength-sapping war. And our power



Figures indicate that our A-A defenses are insufficient. But frequent maneuvers keep our active units well trained. Here we see one such A-A company about to let loose against an "invading" flock of Curtiss Hawks. The scene is Chicago's Soldier Field during a war-game show. (U.S. Signal Corps Photo.)





# Will America Be Ready?

in the Pacific would be at stake.

What then is our military strength? Are we ready for such a critical trial at arms involving fronts scattered over a battleground stretching 6,000 miles across the western horizon? Is our Navy ready for a major campaign? Is our Army one that can be quickly prepared and transported to the various vital points? And what's most important to us—are our air services capable of driving invaders from our shores?

Or has the canker of inactivity, the mold of peace, the pacifism passion, or the plague of politics enfeebled America's fighting forces?

These are the questions we have put before the experts who should know. Now we offer their statements for your careful consideration. And you—the youth of America, who would be called to the colors in event of a crisis—should be decidedly interested in their conclusions which bear so critically upon your future.

Our Navy is called our first line of defense. Let us now see how Rear-Admiral A. B. Cook, U.S.N., Chief of the Bureau of Aeronau-

Facts can't be denied. With wars and war fevers raging throughout the world, our country is nearer a gruesome conflict today than at any time since 1917. But could we defend ourselves if a great power from across the seas suddenly hurled her fighting forces against us? Here are the striking opinions of such leading American authorities as Rear Admiral Cook, Secretary of War Woodring, William R. Enyart of the N.A.A., World War fighter Arch Whitehouse, Major Gardner of the Institute of Aeronautical Sciences, and Major Stevens of the Air Corps.

tics, looks upon the question of American preparedness. Here is his statement made exclusively to FLYING ACES—

## DEFENSE VERSUS OFFENSE

By A. B. Cook

Rear Admiral, U.S.N., Chief of the Bureau of Aeronautics

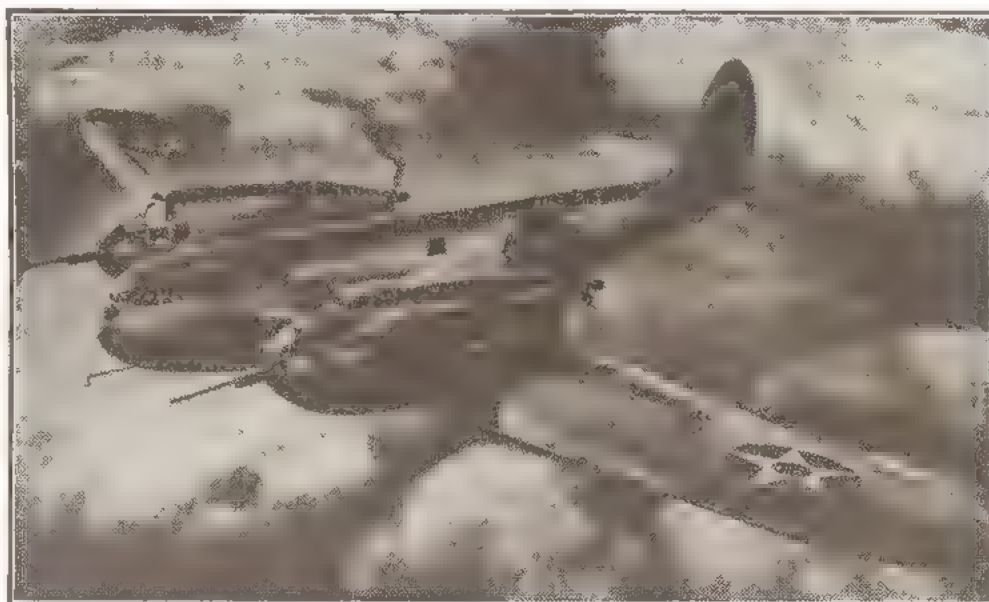
**I**N the face of the present world unrest, the question of our national defense—and our air defense in particular—is causing confusion in the mind of the public.

The startling developments made in the field of aviation throughout the world naturally has introduced a new naval function of ever-growing importance—that of the protection of our country against air

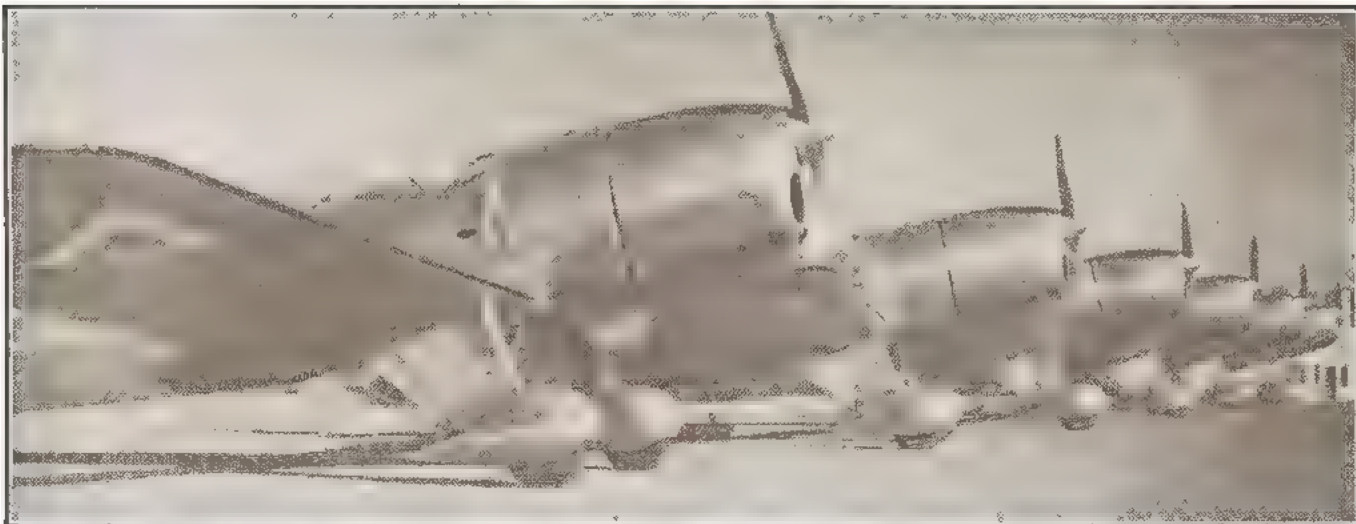
attacks by enemy planes flying from afar.

The Navy believes that the country's best defense against large scale air raids from overseas can be given

That fierce new multi-place fighter, the Bell "Airacuda"—one reason why our Secretary of War says our military planes are the equal of any. Pusher props, automatic cannon, interchangeable stations for combat crews, and Allison 1,000-h.p. engines are among the features incorporated in this powerful warrior of the skies. (U.S. Army Air Corps Photo.)







In event of an emergency, many of our commercial plane manufacturers would be called upon to produce craft suitable for war work. The Ryan company has already proved its ability to turn out such ships, as evidenced by this impressive line-up of military trainers to fill an order from the Mexican Army Air Force.

by the Navy itself. Since there is no immediate prospect of an airplane able to fly to the United States from across the ocean while carrying a destructive load, any air attack must, therefore, come (1) most of the way via surface ships, or (2) by making intermediate stops for refueling. The latter could not be done, however, without first establishing great air bases, and the Navy is the best defense against such an undertaking.

In considering the former, our greatest threat of air attack comprises airplanes carried by hostile ships. Here it must be borne in mind that such a force must be met, sunk, or driven off by our naval forces before their air strength is launched against our coast.

It may be seen from the foregoing that no serious threat of invasion of our coast, either by air or by ships, is possible so long as our fleet controls the sea. And note that in building up naval aviation, the Navy has required that its fleet air arm must conform to the same fundamental requirements which obtain in the develop-

ment of all Naval forces; namely, that it is justified only to the extent that it exercises an important influence on the control of the sea areas and that it must be capable of operating efficiently in any part of the oceans of the world with our fleet.

Experience has proved that airplanes, in themselves, are not capable of operating independently over the vast stretches of the open sea. For this reason, no fleet operating in various sea areas thousands of miles from a base can be assured of the vital assistance afforded by airplanes—unless it provides within the fleet itself the means of basing, maintaining, and efficiently operating them. In line with this principle today, every one of our combat ships, except destroyers and submarines, carries its complement of airplanes, varying in number from 76 on the aircraft carriers to 3 on the battleships. Moreover, constant training has developed tactics for harmonious and efficient cooperation between air, surface, and sub-surface units to a point where aircraft in fleet operations are as much an indispensable part of the whole as cruisers, destroyers, or submarines.

Airplanes have not supplanted ships, but they have added tremendously to the offensive power and efficiency of the fleet as a whole.

Following the signing of the Vinson-Trammell Bill by the President in March 1934, an orderly and continuous aircraft program was laid down calling for approximately 2000 airplanes by 1941. At the end of the last fiscal year (June 30, 1937) the Navy had 927 service and 195 obsolescent aircraft on hand and 820 new aircraft on order. This represents an increase of 216 airplanes over the total on hand and on order on June 30, 1936.

Also during the past fiscal year, four new patrol plane squadrons and eight aircraft carrier squadrons were placed in commission. The last group represents the air strength for the new carriers *Yorktown* and *Enterprise*.

When the entire planned program is complete, the Navy will have a total of 68 combatant squadrons, of which 37 will be ship based, 22 tender based, and 9 attached to the Fleet Marine Force aviation units.



Invading air squadrons like to keep their approach a secret—but the secret's out once this sound locator is switched on! But the big question is: Have we got enough of these devices? The delicately-tuned horns catch the scarcely audible engine sounds of onrushing planes, and recording dials quickly indicate the direction of the attack. But the big question is: Have we got enough of these devices to comprise a real defence? (U.S. Signal Corps photo.)



**I**T is an historical fact that our Navy has invariably stood for peace so far as is compatible with the promotion and protection of American interests. At the same time, it is known to all service personnel and appreciated by the majority of civilians that only a strong navy can accomplish these great efforts without resort to war.

The argument that disarmament encourages disarmament has been proved fallacious by the United States. In the world today, we must be prepared as adequately for defense as any other nation is prepared for offense—whether the attack takes the form of a naval blockade or an aerial bombardment.

And that is the goal toward which the aviation of our Navy is building.

And now, readers, we will consider the strength of the Army. These views are taken from the Annual Report of the Secretary of War, with particular stress on the power of our Air Corps—

**OUR WAR PLANES THE EQUAL OF ANY**  
By the Hon. Harry H. Woodring  
*Secretary of War*

**F**OREIGN countries are making heavy increases in the strength of their air arms, and most of the first-class powers have many more airplanes on hand or under construction than we have. However, in quality, our new planes are at least the equal and probably the superior, type for type, of any military airplane in the world.

Our program of airplane procurement does not contemplate attaining the numbers possessed by other countries. With our favorable geographic position and our determination to use our military strength for defensive purposes only, we believe that 2,320 military airplanes will be sufficient for our needs.

We now have on hand approximately 1,000 new military airplanes, nearly all of them less than 3 years old, and another 1,000 are under order. In addition, we have on hand several hundred serviceable planes classified as obsolete. These older planes will all be replaced within the next year or two.

Our goal in airplane strength is 2,320 modern serviceable planes to be attained not later than June 30, 1940. Recent aviation developments have produced military airplanes of much greater speeds, with much (Continued on page 73)

Here are some of the U.S. sky battlers which would see grim action should an enemy invade our shores. Photos, from top to bottom, show the Army's sleek Seversky BT-8, the Navy's scout-observer SOC-2, the Air Corps' speedy Northrop A-17A attack job, fighting craft aboard the U.S.S. "Saratoga," and the new, deadly, 20-ton Army bomber—the XB-15.





# Eclipse of the Hun

A STELLAR STARTLER FEATURING PHINEAS

• • •

By Joe Archibald

Author of "Cat's Spad-jamas,"  
"Flight Team Flight," etc.

With Illustrations by the Author

A GENTLE wind was breezing a dulcet ditty through the palm trees on the beach at Waikiki and hula maidens tossed their hips with reckless abandon to the plaintive strumming of steel guitars. But it just happens that this story takes place in France—so we will have to forget about the peaceful Hawaiian Islands.

Since all yarns have to start *somewhere*, this one might just as well begin on a narrow Frog road—a highway under construction not far from Blercourt. It's night. And a Yankee first looie and a tall gangly top-kick are putting the pressure on a gang of Senegambians who are building a right of way toward the palpitating front lines. They're laboring with the zest and dash of so many pall bearers and their dark pans sporadically take a gander at the ozone over their heads.

"Come on, ya gallopin' domino champs," Sergeant Colvin tosses at the patriots from Dixie, "don't tell me yu're afraid of an 'owl'!"

"Ah ain', Sarge," one husky pork chop addict shot back, "long as they don' talk lak Ah does, an' walks lak Ah does, an' don' fly no ahplanes."

"Ha! Ha!" Lieutenant Myers said to the top-kick, "there's no bird that can fly like they say this von Heinz can. Aviators drink too much cognac. Anyway, no Heinie is going to come over in soup like is upstairs tonight just to bomb some engineers."

"We're buildin' a road, ain't we, Lieutenant?" the top-kick retorted. "An' doughs walk over roads, an' trucks drive over 'em an'—" He stopped suddenly. "Listen!"

The dark doughs stiffened as if their blood had turned to starch. "Oh-h-h-h-h! O-w-w-wl stay 'wa-a-a-ay from mah do-o-o-o'!" wailed one.

"Feets, when Ah gives de word, don' sprout no mo' unions, no s-a-a-a-ah!" hollered another.

"I don't hear anythin', Colvin," Lieutenant Myers

cracked severely. "Come on, sweet-hearts, start diggin' into that terra firma!"

The Senegambians reluctantly went back to their stints. Everything now seemed as quiet as the main street of Glasgow during a charity drive.

BUT upstairs and not far away, the grim figure of *Hauptmann* Adolph August von Heinz—he who was dubbed The Owl of the Ozone—was slumped down in the pit of his Albatros. The top of his leather casque barely showed above the office of his sky buggy. Softly purred the Mercedes engine as his big greenish eyes glowed with anticipation of a night of skullduggery.

This latest threat to Lieutenant Phineas Pinkham, Cagliostro of the Ninth Pursuit Squadron, was a strange Heinie any way you looked at him. He was born on the stroke of twelve in the middle of the Black Forest, and it was rumored across the Rhine that every mouse in the Province scurried to cover when the stork dropped this Kraut squaller down the chimney of the Heinz menage.

From that day on, von Heinz got blind staggers when he looked at the sun, and the War found him sleeping in the daytime far removed from his comrades—to be exact, in a little hut a mile from the Heinie *Staffel*. It was said that his own cronies always gave him a wide berth, also that a big owl always sat on the limb of a tree near his hut to stand guard while he slept.

"Ho! Ho!" The Owl chortled as he headed toward Blercourt. "I see idt der lighdts ein liddle bit und das ist gut, ja! Zome verdammt Yangkees at vork yet, hein? Ach, sooch a sport idt vill be!"

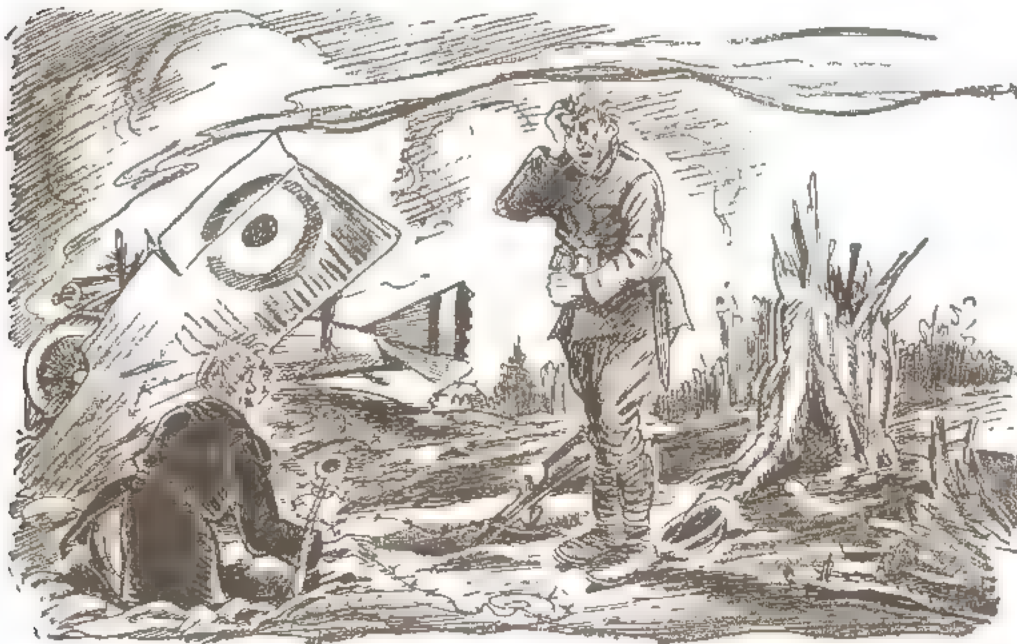
Below, on the Frog soil, the tall, gangly top-kick now heard the drone of von Heinz's Mercedes for sure. He let out a yell that lifted the first looie's feet off the ground. "There he is! Run! Duck, you guys!"

BLAM! BLAMETY  
BLA-A-A-AM!

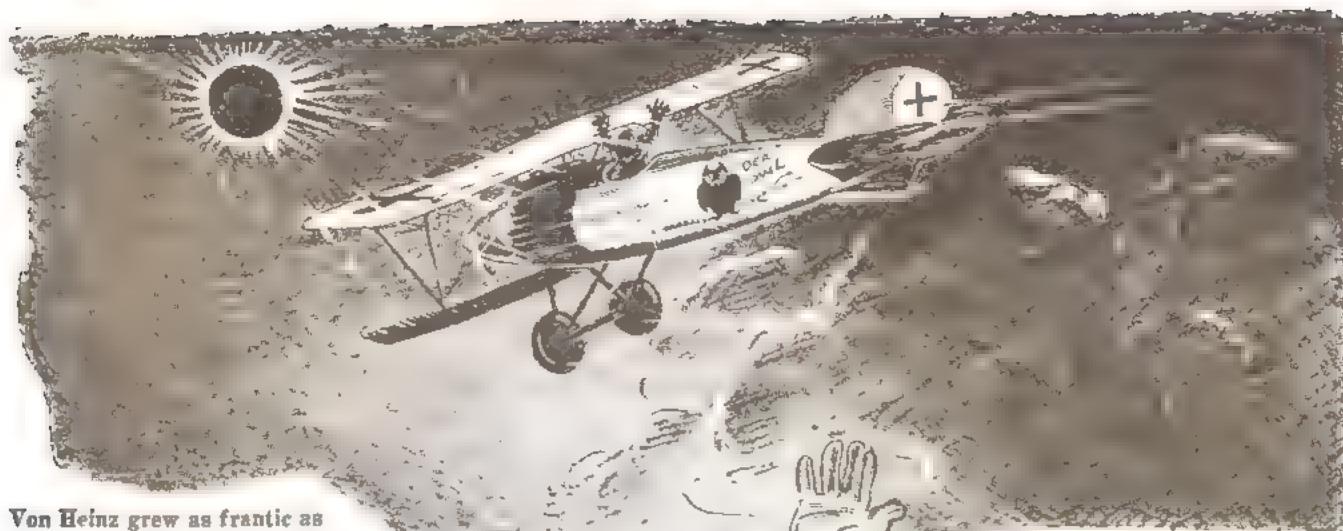
The Senegambians tossed aside their earth-tickling instruments and headed for Paris and the Channel. The looie and the top-kick dived into a ditch and tried to dig a deeper hole with their hands. "Cr-r-r-ipes!" enunciated Sergeant Colvin. "It'll take the Northwest Mounted two years to find them dinges again. Stop pushin' that dirt in my face!"

"Can you make grape jelly without scatterin' "

"Of all th' trees in France, ya had ta hit THIS one!" roared the irate sniper as Phineas spat out a mouthful of barbed-wire-garnished real estate.







Von Heinz grew as frantic as a nymph wrapped in poison ivy! He was surrounded—on one side by Pinkham, and on the other by that fearful ring of light.

some seeds?" the Lieutenant cracked back while The Owl continued to unload his eggs. "Huh, why don't the Yanks ever teach flyers to work after dark—that's what I'd like to know. I heard that this crackpot, Pinkham—!"

AS a matter of fact, Phineas Pinkham was upstairs. For the past three nights he had been taking to the heavens without a light—to see if he could brush The Owl out of the attic. But the jokester from Boonetown, Iowa, had found that it was not as easy as putting flies in the Old Man's soup.

And now Major Rufus Garrity's wonder man had caught up with The Owl just as that haunting Heinie arched across the scraposphere preparatory to taking a powder back to his nest.

Herr Hauptmann von Heinz flapped his wings—and hopped on the Yankee bat as if to lift him right out of his Spad with the Alb's undercarriage. He poked enough lead into the Pinkham crate to sink a tramp steamer, and right quicky Garrity's night watchman signalled for a fair catch and downed the jittery Spad on the Allies' forty-five yard line. It sideswiped a dead tree—out of which something plummeted smack down upon Phineas.

"Ya fathead!" roared a voice. "Of all the trees in France, ya would have ta hit this one."

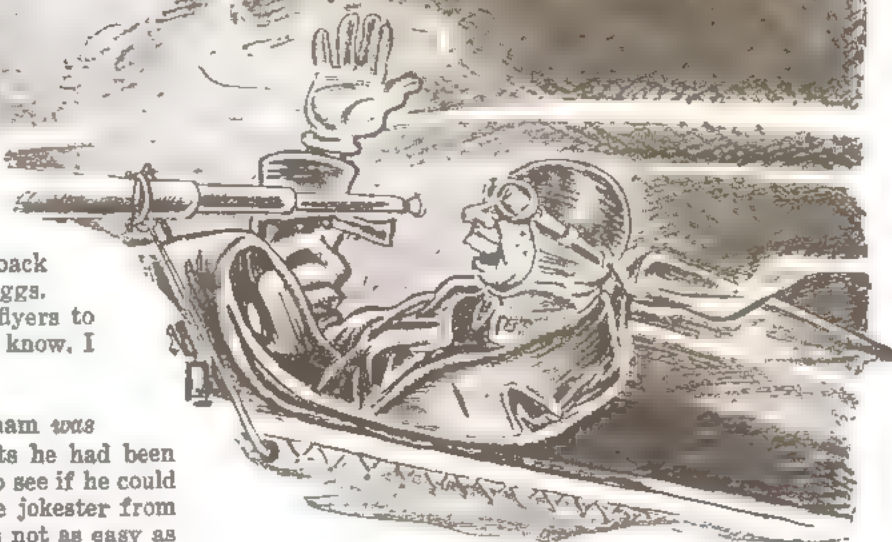
"Y-yeah?" spat out Phineas along with some barbed wire and a mouthful of Frog real estate. "What was ya climbin' a tree for? An' a dead one at that! Coward, huh? I'll report ya to your commandin' officer an'—"

"Nuts to you an' many of them—even if you're a general," retorted the big dough as he gruntingly helped Phineas out of the mess. "Didn' ya ever hear of snipers, dope?"

"I used to watch 'em snipe butts in front of Gribbon's poolroom back home," Phineas grinned. "Uh—er—oh, you're a sharpshooter, huh? What was you gunnin' for?"

"Partridges," the dough snorted. "Say, that spill musta knocked you cuckoo, an'—"

BR-R-R-R-RANG! SPI-I-I-I-ING!



"Run!" the grounded sniper hollered at Phineas. "That Kraut is gettin' back at me."

"Why? Are you both from the Kentucky mountains?" the flyer yipped, picking up the fellow's rifle and ducking low toward an advanced trench. "It's a fine kettle of smelts for you to keep feudin' while the Allies—"

IN a nice safe trench, Lieutenant Pinkham took a good look at the dough's rifle. It had a telescopic sight which intrigued him. "That brings things up close," he mumbled. "Why through this thing, a Singer's midget would look like Jess Willar—"

"Hah, it was pretty how that Heinie knocked ya off, Pinkham," a shavetail suddenly smirked. "The Owl again, huh? Looks like he's top man around this guerre."

"Oh, yeah?" snorted the miracle man of the Ninth. "It's only a run of luck he's havin'. He is a coward, as he only sneaks out at night. But I will smack that bum yet. You wait!"

"Wait? Chaumont don't want to," a captain horned in, poking his head out of a dugout. "If he ain't stopped right soon, we will never get any guys to replace us here and will have to eat our shoes. Last night he washed up four trucks loaded with rations, and the night before—"

"Never mind bringin' that up," Phineas interrupted, cut to the quick. "Get me out of this ditch, as I do not want cuties all over me."

On the Western Front, things looked mighty dark for the minions of Democracy—so dark, in fact, that by contrast the pall over Pittsburgh resembled a bridal veil caressing a snowdrift. Once again the fly-by-night in the Entente ointment and cocklebur in the Allied rompers was that sinister Hauptmann von Heinz—The Owl of the Ozone. But what of Phineas? Well, he'd bought himself a book on the Cosmos. To put it poetically, Car-buncle was "lost in the music of the spheres!"



I demand transportation back to Barley Duck."

"I will see if the chauffeur is off duty yet, Mister Vanastorgould. What'll you have, the lemon-colored jalop, or just the town car? Rats! You'll get to Barley Duck the best way you know how. Who asked you in here, anyways?"

Phineas made his way through a maze of trenches until he came to a place in the Yankee backyard where a couple of trucks were just pulling out for points south. The Boonetown flyer hopped one of them and was unloaded ten miles short of Bar-le-Duc. Here he slept in a Frog barn until late the next morning.

When he woke up, a cow was nibbling at his ears. He pushed the hay away from him and sat up.

"Ugh," he gulped as the cow continued to rake him with her tongue. "Gosh, I wanted to be back las' night, too, as it was Howell's birthday and I can't wait until he tells me how he liked the can of tobacco I gave him. An' the necktie. That was the best necktie I could buy, haw-w-w!"

But Phineas' mirth was short-lived. Several bruises on his anatomy reminded him that he had met *Herr Hauptmann* von Heinz not many hours before. He could already hear his fellow buzzards adding insult to injury, and he could hear the Old Man grinding his teeth as he wrote another Spad off the list of Ninth Pursuit winged battleships of the sky.

"There must be some way to get that Kraut bum," Phineas mused. "I guess he's the toughest I ever met. He can do anythin' in a Heinie air circus but walk a tight rope from one crate to another when they are ten thousand feet up. He's a better shot than Annie Oakley, an'—well, the bum can do anythin', even screech like an owl. But a Pinkham never gives up. It is brains they use an' not brawn. Look out, you wienie eater, as it is a Pinkham who has been pushed too far!"

**MAJOR RUFUS GARRITY** walked the floor of the Operations office waiting for word from Phineas. The infantry outfit had reported him as sound-on-the-hoof as could be expected when he had left their midst.

"Deserter, ha-a-h?" rumbled Garrity, coming out into the big room of the Frog farmhouse he used as headquarters.

Captain Howell hoped so. He wanted the pleasure of seeing Phineas Pinkham shot. His eyebrows were burned off and the end of his nose was done to a turn.

"Gunpowder in that tobacco, huh? It was criminal assault! I will prefer charges against—I—er—aw-w-wk!" While Bump Gillis watched, Captain Howell got blue in the face. He was slowly strangling to death before the Scot's eyes even though there were no hands anywhere near his throat.

Now the captain was hauling and yanking at the new black silk tie Phineas had also given him for his birthday. "Ha-a-alp—glub—ugh—up! Aw-w-w-wk! G-gur—gle—aw-w-w-wp!"

"Don't just stand there, Gillis!" the Old Man roared.

"Do somethin'! Rip that necktie from his throat!"

"You don't look any brisker to me than an iron elk on a lawn yourself," Bump retorted as he fumbled in his pocket for a knife.

"Don't speak to me in such impertinent fashion, Gillis," Garrity stormed. "I'll bust you wide open, you—"

"A guy is dyin' an' you talk of discipline," Bump sniffed. Then he managed to cut the black tie loose from Howell's throat without taking a piece of jugular vein with it.

"G-git that b-box th-that tie come in," the Captain gasped when his windpipe was open for business once more. "Wh-where is it?"

Glad Tidings Goomer picked it up, brought it to the Flight Leader. On the cover was printed:

MERLIN NOVELTY COMPANY

*Bluebeard's cravat. A self-shrinking tie that needs only perspiration to perform its amazing magical feat. Only thirty-five cents. Ten cents extra in Canada.*

"I-I'll kill him," Howell roared. "S-s'posin' nobody had been around. I'd be a corpse. I want him arrested the moment—"

"Let The Owl get him," Bump suggested. "It's only a question of time. Don't have no murder on your conscience, as the bum ain't worth it! Maybe he is even dead now, I hope. And wouldn't that be swell news!"

The Old Man staggered back into his sanctum just in time to get another diatribe over the wires from Wing Headquarters. Chaumont wanted something done about von Heinz. The Major swore, told a colonel to drop poisoned mice back of the lines as that was what owls ate, and offered other potent suggestions. "Get some prairie dogs, too," he howled. "They're owls what caviar is to a Russian!"

A brass hat arrived at the drome twenty minutes later to insult and threaten the C.O. right to his face. He wanted to know when the A.E.F. engineers were going to get a road built so that troops could be moved up without being washed out every time they shook a foot. The brass hat, incidentally, was a man whom Major Garrity had never felt like taking to his bosom. He was a pompous, swivel-chair jockey with a waistline that reminded nobody of Vernon Castle.

"They made you a brass hat, Gilpey," Garrity roared, "be-

cause they figured you could think of things like that. All they do in Chaumont is ask what to do. If we knew, we would be sittin' at a desk pushin' buttons. You think of the way to knock off von Heinz!"

"You are insubordinate, Garrity!" Gilpey blustered. "I'd have a care what I said if I were you."

"Go ahead, sue me!" erupted the Old Man.

The brass hat poked an index finger into the bowl of an old dudeen. Then he reached into his pocket for tobacco, suddenly got huffy, and kicked a chair over. "Dammit! Forgot my—oh, I see you have some tobacco; Major. Mind if I—?"

"Help yourself," Garrity grunted without thinking.

(Continued on page 76)



"Ach Himmel!" hooted The Owl as he peered at the sky. "Der Dumkopfts ledt me sleep und der night idt cooms already!"



# Snapshots of the War



Still another freak Fokker, this time the K-1 twin-fuselage bomber built in '14 and sent to the Front in '16. She carried two Oberursel rotaries, one tractor and one pusher. We have no records indicating that this queer job saw action—but that's what makes this "shot" rare, so clip 'er out, scrap-book fans. (Niels photo).

Right: Bill Thaw, one of America's first air heroes, is shown here preparing for his daily patrol over the Lines in his Newport Scout. Note the knitted casque which he wore under his regulation helmet. Thaw, you know, joined the French Foreign Legion at the outbreak of the War and later helped organize the Lafayette Escadrille.



We have no records indicating that this queer job saw action—but that's what makes this "shot" rare, so clip 'er out, scrap-book fans. (Niels photo).



What kind of fellows were those German pilots? Well, here's a typical group of 'em before a Fokker AE-1. The two in the middle—Oberleutnant Hintendorff and Lieutenant Austinger—have just returned from a "show" over the Lines. Thus far, we haven't been able to identify the other two. (Niels photo)



Above: One more Jenny trainer soaked out! And how many does THAT make, Mr. Statistical Officer! The real story of this crash is lost in the records—but maybe the dashing cadet tried to snatch an apple from that orchard back there as he flew by.

Right: Boelke, the great German Ace, has shot down a British B.E. And here a party of the Kaiser's Brass Hats are having a look-see while spike-helmeted guards stand by to keep off the souvenir-hunting infantrymen. As the jotted date indicates, it all happened in 1915—but the true facts as to whether the Limey airmen were killed or captured are buried deep in the War archives.





# Wings Against Doom

o o o

**D**RAMA—stark and vivid drama—was being unfolded in the frigid north. And that modern miracle, the radio, was flashing stirring word pictures of its grim action across uncivilized wastes to leave an anxious world gasping at its fearful reality. The scene was a forsaken spot far north in the Arctic Circle above lonely Aklavik, and the unfortunate players were a Catholic bishop and nine of his men whom Fate was sentencing to a lingering death.

Eager listeners caught the sweep of that sensational story as it crackled through the ether. And the climax of that fight for life in the frozen wastes gripped their imaginations. The radio account at best was only meager, however, and soon the air audience was twirling the dials in search of a new thrill.

But had they known the full details of the case of Bishop Falaize, they would have realized that they could twirl their tuning knobs for a mighty long time before hitting on another thrill to match this drama of the Arctic.

And now I'll tell you the inside story:

First off, I want to introduce a courageous flyer—Matt Berry. A Canadian Airways pilot, Matt operated out of Fort McMurray in northern Alberta. And to make sure you have a good idea of distances in that

**By Edward Green**

Author of "Planes Rout the Salmon Poachers," etc.

neck of the globe, let me tell you that the aforementioned Aklavik lies more than a thousand miles farther north than that.

Matt is a veteran. True, he's getting a little gray around the temples now, but he's still without a peer as a master of blind flying. By "blind flying" I mean exactly that. At the time these events took place, Matt used no instruments. Indeed in the land where he flew, the then-current variety of compasses were about the most unreliable of flying instruments. Their needles suffered with St. Vitus Dance—because of the close proximity of the Magnetic North Pole. And many uncharted ore deposits likewise had their effect upon the key instrument of aviation.

Matt first jumped into national fame when Flight Lieutenant Sheldon Coleman and Air Engineer Joe Fortey were lost while en route from Hunger Lake to Fort Reliance in the wilds of the District of Mackenzie. The two men, both members of the Royal Canadian Air Force, were engaged in survey work on the Barrens; and their adventure began when another plane developed engine trouble and a new engine had to be "flown in." Coleman and Fortey made the delivery—but on their way back to Fort Reliance they vanished!

The hunt for these two men was almost without parallel in the history of northern Canadian aviation. Practically every available airplane in the north was engaged in the search, and commercial companies dropped their routine flights to take part. But for thirty long days no word came of the lost airmen.

The winter season was close at hand. Those men *must* be found! So daring pilots continued to course over the uncharted miles, but there was neither sight nor sign of the missing men. If they were not found within the next few days there would be little use in further search. The grim cold of the north would have claimed two more victims!

**T**HEN Matt Berry was assigned to the hunt. He and his engineer, Frank Hartley, arrived at the search-party base just as Pilot Walker, of the R.C.A.F., brought news that he had found an empty gasoline drum at Lac de Gras. Fixed to the drum was a note, written by Coleman saying he'd run into bad storms and had no more than half an hour's supply of fuel left. He stated he would fly due south until his fuel gave out.

Matt Berry read that note. Then another report came in from Gus De Steffany, a Barren Lands trapper. He said he had heard a plane flying northwest on or about the 17th of August—the same day the men were expected to arrive back at their base. Matt, a veteran of those parts, put two and two together. He knew now that Coleman had underestimated his gasoline supply. What was more, his



Left: Matt Berry, the peerless Canuck aviator who unhesitatingly flew into the gale-swept Arctic night—to attempt the impossible. Below: A close-up of the Junkers low-wing. Matt flew on his stark venture. It shows how he carried canoes for emergency use. Fortunately, canoes are stream-lined," says the Far North flyer, "hence they do not appreciably harm the performance of the plane when we portage 'em under the wings." A portion of the ship's skid-underside is visible in the picture. (Canadian Airways Photos).





compass was cockeyed. It hadn't told him the truth.

Then, while the other planes scoured known routes, Matt and his engineer hopped off for Lac de Gras. Arriving there, Matt did a little figuring, then pushed off again. He flew *directly north-west*—for he had doped out the compass deviation in those parts.

His hunch was correct. Soon he spotted a signal fire burning on the shore of a lake. He landed—and found the exhausted and half-starved forms of the two lost flyers packed tight in their sleeping bags. They scarcely had strength to move.

It didn't take Matt and his engineer long to cook them some broth and warm milk. Then the two men were put aboard the plane and flown directly to Fort Reliance. Here they were placed under the care of an Army doctor who had made the two thousand mile trip to the Arctic just to be on hand when, and if, the men were found.

**M**ATT'S feat brought him into the public eye. But he hated the spotlight of publicity, so he calmly went back to his job of freighting mining supplies and furs on the long northern sky run, praying for peace and oblivion.

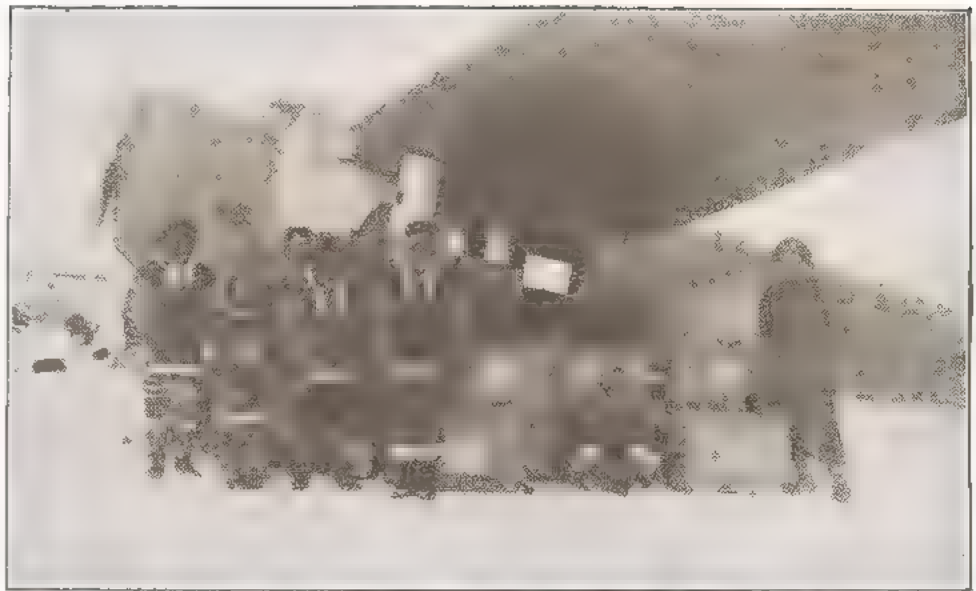
But it was not to be. For even as he plied over his long run, a tiny mission supply boat, the *Lady of Lourdes*, was laying at Pierce Point, far up in the Arctic Ocean, with two propeller hanger bolts broken. The gallant little party aboard it were frozen in and the boat could not be moved for at least seven long months.

Bishop Falaize was in charge of the party, which consisted of six mission workers and four Eskimo children who were bound out for the Eskimo School at Aklavik. And the story of the gallant Bishop's hardships in the days which followed are characteristic of the hardy brood of men who live in the north.

There were but ten pounds of flour left aboard the *Lady of Lourdes* when the intrepid bishop and his party finally struck out for Paulatourk, a deserted mission village sixty miles away where there would be food caches. The miserable supply of flour was carefully rationed out as the party set forth.

Along the snow-girl way they came across an Eskimo village. Here they left the four small children, being unwilling to subject them to any more hardship. The thermometer registered sixty-five degrees below zero, but the bishop and his party bravely mushed on behind a team of ill-fed dogs borrowed from the Eskimos.

**T**HIS is not a story of the trials and tribulations of the bishop and his party, but you will agree that the fortitude of these men is worthy of note—for after their heroic mush across the top of the world they reached Paula-



Berry (extreme right) lands a Fokker at Richards Island in the Beaufort Sea 100 miles above the Arctic Circle, to pick up a load of tanned furs. Cold? You said it! Why even those Eskimos are hunching up their parka-clad shoulders in an attempt to keep warm.

tourk only to learn that marauding bears had broken into and eaten the food cache of 1500 salmon and 30 seals.

Fortunately, a small piece of meat was found, and this undoubtedly saved the lives of the now exhausted travelers. But Bishop Falaize was in a bad spot. Before leaving the *Lady of Lourdes* he had sent a radio message out from the boat's radio set that he and his party were making their way to Paulatourk. But he now knew it was impossible to stay there. They were almost without provisions and there was no fuel supply closer than twenty-five miles. Thereupon, the bishop turned coal miner and soon had enough fuel put by to keep the little band of men warm in their ice-built house beside the coal outcroppings for some time to come. But what about food?

Without a moment's hesitation, the hardy bishop set off once more for the *Lady of Lourdes* where he would send a radio message to the outside world.

By this time, the outside world had become extremely anxious over the disappearance of the bishop and his men. The long Arctic night had closed down and daylight would be missing for at least five months. Searching parties would be balked by the lack of daylight; there was nothing to do but wait.

Wait they did. And their answer was only nerve-racking silence. They could only visualize in their imaginations the horrible tortures those men were suffering.

Black and sinister, the long Arctic night had closed in upon ten human beings, sentencing them to a freezing, starving death on the desolate barrens "above the circle." Men who knew the grim North despaired of all hope. No searching party, they pointed out, could fight its way over that icy, gale-swept waste. And no airman, they added, dared to fly into that raging pall of merciless elements. But—they didn't know

Matt Berry!

**B**UT then there finally came a radio message—from the bishop himself! The courageous leader of those unfortunate men had fought his way to the *Lady of Lourdes*, had tapped out a call for aid.

The outside world gasped at that message. Somewhere in the lonely Arctic, a bishop and his mission workers were dying in the frozen wastes. Bishop Breynat, of the vicarage of Mackenzie, immediately contacted Bishop Falaize by radio, told him to return to Paulatourk and a plane would be sent in to bring his party out.

His senior's orders sent a cold chill down Bishop Falaize's spine.



He must make his way back to the coal mine and order his party to break camp and mush another twenty-five miles to the Paulatourk mission—where there would be neither coal nor food. The bishop knew that no airman could be expected to fly in such violent weather, let alone locate a lost party in the blackness of the Arctic night. And if they abandoned the tiny coal mine and went to the mission, it would be to face a freezing, starving death. Yet if they didn't, and an airman did happen to find the mission, then that airman might lose his life.

The bishop felt that he had no alternative. He made his reluctant way back to the mine, and with a heavy heart he ordered his men to move on to the mission.

The weather now became atrocious. And having had long experience with the ruthless elements of the north, every man in the lost party knew what that meant. They agreed that if an airman attempted to find them it would be the most audacious gamble in the history of Canadian aviation. And if he did find them, the feat deservedly would be hailed as the most astounding feat of flying yet seen. But knowing the Arctic, they were pessimistic. There was scarcely enough light to make out objects ten feet away and even this poor visibility was obliterated more often than not by blinding snow flurries. No, the men told themselves, the pilot never lived who could bring a plane through that cloying, frigid hell.

**B**UT they didn't know Matt Berry! True enough, when that hardy flyer received orders to go to Paulatourk and pick up the stranded party, he knew what he was up against. But with a characteristic shrug, he superintended the fueling of his big Junkers low-wing and pushed off from Edmonton, Alberta, 1860 miles south of Aklavik, bound for the grim darkness of the friendless Arctic. Equally brave, Air Engineer H. R. Terpenning accompanied him.

Berry's destination was the mission on Hornaday River, 350 miles northeast of Aklavik, far up in the Arctic.

Battering storms hammered at the Junkers. But Matt set his jaws grimly, pushed on. And the further north he flew, the darker it became.

The first vivid drama of that flight is hidden in Matt Berry's log:

*December 4th—Fort Chipewyan to Fort Smith, 105 miles. Fort Smith to Fort Resolution, 137 miles. Strong headwinds. At Resolution it started to blow a gale*

*as we landed and remained quite dirty the rest of the afternoon.*

Picture the fury of that gale. Vicious squalls of wind driving shot-like particles of snow before it. And when these northern flyers call anything a gale it's a safe bet that 60 miles per hour is the minimum velocity of the wind. But read on:

*December 5th—Resolution to Fort Rae, 177 miles. Fort Rae to Fort Norman, 385 miles. Beautiful clear day.*

Note that laconic remark about it being a clear day. That gives you some idea of typical Arctic weather—clear one moment, a howling gale the next. But Matt is now getting into the true north. Here's his next two entries:

*December 6th—Norman to Good Hope, 162 miles. Unable to land at runway at Good Hope owing to heavy fog on river. Made three attempts to get on runway but gave it up as too dangerous. Landed on south side of island and was able to taxi around. Very cold—45 degrees below zero on the river And plenty unpleasant.*

*December 7th—Good Hope to Arctic Red River, 208 miles. Arctic to Aklavik, 108 miles. Temperature — 54 degrees below zero at Good Hope. Very foggy on river this a.m., so we were forced to wait till it cleared somewhat to take off. Heavy fog at Thunder River, so we could not land at all. Open water about 200 yards from Clark's house, so it is unlikely we can land there this trip.*

At Aklavik, Berry checked his ship over carefully. His next hop would bring him to Paulatourk—if he were lucky. The air now crackled with frost, and visibility was virtually zero. Bee-line flying would be the order of the day from now on.

But not for a moment did Berry contemplate failure. So far as he was concerned, those mission workers were as good as saved—though hardly a man in Aklavik thought that last lap could be made.

Berry's log on the first leg of the flight above Aklavik reads:

*Aklavik to Mission, 350 miles. Clear all the way to Darnley Bay but blowing quite a gale from the south when we arrived. Could not see landing marked out for us, but got down safely anyhow. Bay was quite rough.*

**F**ROM here on, Berry's log is a revelation of the discouraging weather conditions in the Arctic. Then:

*December 10th—Mission to Letty Harbor, 60 miles. Letty to Mission, 60 miles. Took off at 9.35 and landed at 12.30. Brought back two passengers, Father Griffin and brother. Brought back a load of grub for mission. Got away to an early start, but the Arctic night was so black and the weather report from Aklavik so bad that we had to tie up for the day. Cloudy to west and south. Radio very poor.*

In fact, weather conditions made flight impossible for the next four days. But December 14th, Berry was ready for his big attempt—the rescue of Bishop Falaize and his party. He knew approximately where they would be found, so at an early hour he hopped off for Paulatourk.

Berry's keen eyes scanned  
(Continued on page 80)



Matt Berry's ski-carriaged Fokker at desolate Road Island, off the Arctic Coast. The author calls this snow-swept scene of frigidly "a summer view." But we nearly contracted pneumonia just looking at it.



How Japan

# Might Attack America

SENSATIONAL STORY BEHIND OUR COVER PAINTING

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FOR years, the geographical position of the United States has been used as an argument in favor of her defensive advantages against attacks by an enemy; for it has always been very easy to say: "Of course, we are 3,000 miles from Europe and well over 6,000 from any Asiatic power."

Usually that satisfies the general run of the public to whom real war is more or less incomprehensible.

A few years ago, however, Hector C. Bywater, a noted British writer on Naval affairs, shocked this country with a book in which he described in startling detail a conflict between the United States and Japan. The book was called *The Great Pacific War*, and between its covers Mr. Bywater pictured sensational sea battles which might take place tomorrow. He explained that Japan, to satisfy domestic concern after the relatively futile campaigns against China and Manchukuo and to divert her people from the tenets of Communism now taking root in the Island Empire, might use paltry differences concocted in China as an excuse to declare war on the United States, the hereditary target of the Jingo societies now so powerful in the Island Empire.

Regardless of the worth of the excuses or the basic points of difference, one can readily see that a few "incidents" such as bombings, the assassinations of minor officials, and arguments concerning concessions in China, could soon be worked up into a major quarrel.

Bywater then goes on to show what moves the Japanese might make to get in the first successful blow. First, he relates in his story, trouble would be stirred up in the Panama Canal—possibly the blowing up of a Japanese steamer to block one of the important channels. Then the comparatively small American Asiatic Squadron would be cut off from Manila and probably sunk. Thereupon, Guam and the Philippines would fall with hardly a shot being fired.

The rest of the story is a sea-strategy packed account of a long war in which the Nipponese gained first blood and took up key positions at many points of the Pacific. How the United States finally won out after years of effort is narrated in masterful style.

"But this is fiction," you may argue. "Granted, it might be easy for a naval strategist to create such a war, knowing full well what he intends to do with the pawns he has to work with—but could an Asiatic power really attack the west coast of the United States?"

Well, Hector Bywater, using the military weapons and naval equipment available in 1931, had no trouble

in putting up an argument. And in the past six years much has happened to make Japan's chances even better.

For one thing she has developed a trained Army and Navy which has been well tempered in the fires of battle. Her air service likewise has been greatly improved, for she has been able both to build and buy aircraft of the finest quality. Moreover, her pilots and observers have had plenty of active service training in China and Manchukuo. On top of all this, the service range of her bombing planes and patrol ships has been greatly augmented.

And now let us look at the map presented on our cover this month. Our artist, August Schomburg, has depicted the quarter of the globe that will see most of the action should such a Pacific war break out. And the first thing you'll note is the startling fact that Japanese territory is less than 700 miles from United States territory at one point—from the upper portion of the Kurile Islands to the outer tip of the Aleutians. It is from the Kuriles that Japan might initially strike.

Suppose we follow the theory through: First of all, if you will study the general layout of the territory dis-

closed on the map, you will see that Japan can move eastward, via the lower latitudes, for a distance of about 3,000 miles, using nothing but territory she already owns. For if you glance south-east from Tokyo you will find that Amami, Bonin, and the Marshall Islands south of Guam, are all under Japanese mandate. From any of these points a naval flotilla well punctuated with aircraft carriers could be serviced for the first move toward the Hawaiian Islands. Guam, of course, would

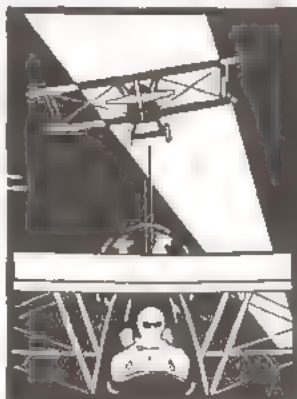
quickly have been swallowed in the first southeastern gulp, since Japan controls the neighboring archipelago.

Then the capture of the Hawaiian Islands would automatically move Nippon's surface fleet bases to within striking distance of the Californian coast which lies some 2,100 miles from Honolulu. And should she capture Hawaii, Japan would have snatched one of the world's greatest naval bases—Pearl Harbor.

From Hawaii, Japan could send her flotilla toward Los Angeles and San Diego. Immediately, the big guns of her capital ships would be trained on the naval base, Fort Rosecrans, Fort McArthur, and the vast oil well areas west of the town of Los Angeles. And Japanese planes hurtling from carrier decks would no doubt cut inland bent on bombing the Colorado River aqueduct, which supplies Los Angeles with water, and the unpro-

(Continued on page 92)

Nippon, the Island Empire, has become a military giant—and considering the striking battle ranges of modern aircraft and naval vessels, America's geographical "isolation" does not make her as invulnerable to invasion as is commonly supposed.





# Coffin in the Fog

• • •

## The Griffon Flies Again!

• • •

**D**RAB and decrepit, the street was typical of those that run east and west from river to river below that gaudy stomacher of Manhattan Island known as 42nd Street. And the dilapidated brownstone houses that lined it frowned down cruelly as they bared their hideous iron gratings to the few weary plodders condemned to slosh their sodden feet through the ankle-deep slush of a city winter.

A taxi plowed by, threw a furrow of slush which slapped against the rotting steps of a tenement and drove a mangy cat from behind a barricade of garbage cans. Then all was quiet again, for the street was now deserted.

Minutes passed. Then abruptly the leaden silence was again broken. This time a gleaming black car was creeping, almost dramatically, down the forbidding gully of half-empty structures. Its tires were fitted with glinting skid chains that sang a slow muffled chant of hopelessness, and its solid body spoke of a shabby richness. With two long silver lamps glowing dully on each side of the driver's seat, the ebony vehicle was moving with the tell-tale stateliness of death.

A hearse—the Chariot of Charon! A final tribute to a soul that perhaps had never tasted such luxury during life!

On churned the hearse through the gutter-guided channel of slop, and the dirty street seemed to acquire a pathetic solemnity in this presence of Death.

Then suddenly the funereal tempo was rudely interrupted. A dull red sedan shot out of a narrow driveway with the roar of low gear. It seemed to be out of control, for its chains were biting out gobs of macadam and throwing sprays of sparks toward a slush-splashed hydrant. Now the sedan skidded, jerked around, and threw its rear section across the street. Thus blocked, the hearse pulled up with a retching jerk.

The rest happened with the speed of light. Two men leaped



from the rear door of the sedan and moved like wraiths toward the back of the hearse. Another came out from the front door, dashed for the closed driver's compartment, and swung open its door.

A pistol shot shattered the stillness—and the driver toppled out of the hearse to fall choking and gasping into the slush. He tried once to get up and grapple with his smaller opponent, but the man with the pistol brought the butt of the gun down on his head with a sickening thwack.

Meanwhile, the two men who had darted for the rear

of the hearse were yanking the long pearl-gray casket out along its oiled rollers. They let it drop to the street with a cruel thud. Then, with a final glance about, they slashed at its sides with small hatchets and finally forced a long metal bar under its lid. There was a scrawnch of wood and metal, and the heavy lid crashed back and hung dejectedly on one portion of the hinge. Again the long bar was inserted and pried, whereupon the inner lid plopped up and flapped over.

It was but the work of another minute for the two men to lift out the shroud-covered object

---

Over bleak Delaware Bay roared that sky ghost man called "The Griffon." Fate had sent him in quest of a mysterious unknown plane. But Fate had not revealed to him that even as he flew, a black hearse stood violated of its casket in a sombre Manhattan street, its driver lying murdered beside it. That man had died with Drury Lang's name on his lips—and with Drury Lang's bullet in his body!



# STIRRING NEW KERRY KEEN MYSTERY NOVELET

By Arch Whitehouse

Author of "Death Flies To Fukien," "Griffon's Nemesis," etc.

Illustrated by Alden McWilliams

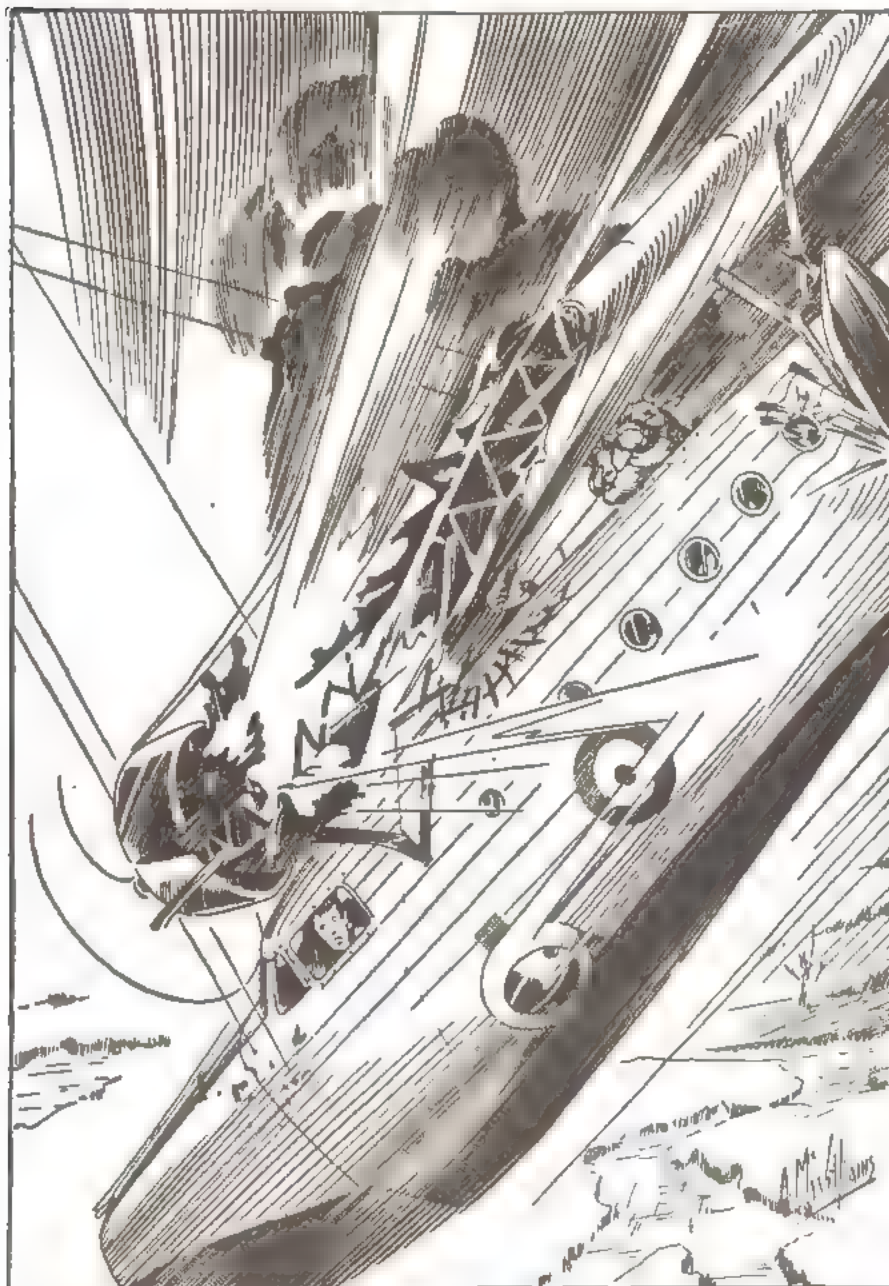
that reposed inside. Without a word they took it at both ends and slobbered through the slush to the dull red sedan. Unceremoniously, they shoved it inside, clambered over it, and wrenched the door to a crashing close.

Then the motor sped up and the sedan shot away—leaving the gaping casket still leaning against the open doors of the hearse.

The man in the street struggled to his feet, clutched at the air. "Lang! . . . Lang, you swine!" he gurgled. Then he fell forward on his face, as a patrolman dashed toward the scene.

The sedan raced on down the street, turned north, and disappeared amid the maze of elevated pillars on Ninth Avenue.

As the speeding Black Bullet curled over, four streams of copper-tipped death spat from its Darns and Chatelleraults. Forked by that withering hail, the port engine nacelle of the diving Sikorsky disintegrated in a terrific blast.



AT the same instant that the gleaming black hearse had been hi-jacked of its silent load, a black amphibian was racing at high speed south from Philadelphia. The man at the controls was dressed in a black coverall and wore a scarlet mask of silk and rubber under his service helmet. He was handsome in a cold determined way. His lips were drawn in a hard line, but there was a hint of a smile at the corners. He stroked his controls, peered ahead toward the long pie-shaped sliver of water known as Delaware Bay.

After a careful inspection of the instrument panel and another adjustment on the throttle, he spoke over his shoulder to the man huddled under the rear gun mounting.

"You needn't go to sleep now," he said. "You'll see some fun any minute."

"Ye've been promisin' me thot all the way down. But faith, it's nothin' I've seen as yet except the blink o' airway beacons."

"Well, don't take any chances on anything. These yeggs are likely to turn up at any second. And they'll stop at nothing."

"So you decide to get in their way. And what was that gag you pulled the other day about an iridescent force meeting an uncomfortable object?"

"Oh, when that happens you get a carnage cocktail—served with potato chips."

"Well you'd be better off if you spent more time worrying about that guy Lang. He'll get you yet."

"I've been thinking of him," said the man in the scarlet mask. "You're right, Pulski, I've got to do something about the redoubtable Drury. He's just dumb enough to get in the way at times. Yes, we shall have to put some salt on that bird's tail, and—"

Abruptly, there was a scuffle behind as the man addressed as Pulski, whirled like a Dervish to get out his guns. The man in the mask quickly pushed his throttle, instinctively brought the black amphibian up into a smart climbing turn.

Just in time!

For a lather of hell suddenly bubbled all about them. Two bursts of fire smacked against the dural sides of the Black Bullet and a splash of cold flame half-blinded the gunner guy.

"Holy Mither o' Moses! They're using a howitzer on us this time!" he yelled.

The high echoes of the heavy armament almost deafened them. Again, from somewhere above, that hellish weapon coughed. Two times hefty slugs slammed past them with a whine of acidy hate.

BR-RONG! BRR-RO-OOM!

The man up front was tense now. He was fighting a mad battle to get



clear of that terrible gun that was belching upon them.

"Yes, those devils have a cannon aboard!" he cried.

He tried to give orders, but Pulski had already opened fire with his .50 caliber Brownings, causing the covered cockpit to vibrate with a bedlam of clatter, rattle, and concussion.

A shell now blazed through the wing, snapped its graze fuse, and exploded with a battering roar. Flame blinded them both for a few seconds, but the pilot managed to dance the black amphibian away with a series of snap rolls and jerky dodges.

Again Pulski's guns clattered and in reply came another salvo of 37 mm. stuff that threatened to blast the Black Bullet out of the sky.

"What kind of a ship is that?" the man up front demanded.

"Can't tell, Ginsberg," came the reply. "Looks like a Sikorsky of some sort—two engined job with some foreign markings on the wings. Anyhow, they're certainly lousy with guns. Let's get out of here!"

"Nothing doing! We've got to put 'em down." And the pilot settled back for business. He gave the flap gear a couple of turns, cut out the Skoda muffler, and the Black Bullet climbed like mad. Behind, the gunner guy continued to pour burst after burst into the nose and sides of the big ship above, and in a moment it was apparent that his scourge of lead had either silenced the cannon or the crew manning it.

The Black Bullet flyers now took advantage of their lead by climbing past the level from which the big twin-engined flying boat was working.

"It's an S-43 Sikorsky," the gunner screamed between his bursts. "As far as I can make out, that concentric circle insignia of hers is green, yellow, and blue. Yes, that's it! She's got the same colors on the rudder."

"I thought so. It's one of those S-43's sold to the Brazilian government."

"That's that country down south that they say just went Fascist?"

"Right! Keep them off now until I get another 500 feet."

"The devils," bawled the man called Pulski.

He hammered another blast of heavy fire dead into the S-43 and then almost went out through the open cockpit top when the pilot suddenly slammed over in a dive.

The man in the mask worked fast. He set every gun in front of him and gave her the juice. With a scream, the Black Bullet braved the return fire of the Sikorsky and rocketed into a daring loop. Then, as the speeding Black Bullet curled over, four streams of copper-tipped death spat from its Darns and Chatelleraults. Forked by that withering hail, the port engine nacelle of the diving Sikorsky disintegrated in a terrific blast!

Relentlessly, the masked pilot held his gun trips down, slammed on through twin streams of gunfire that continued to rage from a special turret set just aft of the trailing edge of the Sikorsky's thick wing.

As they shot by, the gunner behind the masked man got in a final burst. But his shots were not needed. Weakened by the engine explosion, the left wing of the amphibian now tore away with a nerve-racking screech. The Brazilian-marked ship staggered, screwed up into a struggling zoom, then rolled over on her back.

The two men in the Black Bullet watched the plummeting wreckage as they circled in an easy spiral. It

went down in an inverted flat spin, righted itself momentarily, then screamed into the water below.

"Okay! Get ready to take over," the masked flyer said calmly. "We're going down and see what she has aboard."

"Don't pull that line," came the reply. "Ye know what she has aboard!"

THE wreckage of the Sikorsky had hit near the shore. Beyond, lay a sluggish marshy area that crawled away toward Cape Henlopen. The pilot of the Black Bullet circled carefully, drew a lever that lowered the retractable pontoons, then cut in the Skoda mufflers again.

With care and delicate skill he brought the Black Bullet down on the bay, then let her skim gently up to the tumbled wreckage which lay high in the water, indicating it had hit on a shallow bar.

He moved out of his seat and clambered out on the wing, while the man called Pulski moved up, took the control seat, and kept a careful watch behind. Then with a light movement he boarded the wreck, made his way to the open gun turret, and slid through. With a handy pocket torch he studied the interior a minute. Below him against the angle of the wall and floor lay two men, obviously foreigners. Both were dead.

Next, he moved up into the control pit, studied the Madsen air cannon mounted there, jotted down the gun numbers, and finally fingered through the pockets of the dead pilot and the still-breathing gunner.

The papers, books, and maps he gleaned from this ghastly inspection were quickly stuffed into the large thigh pockets of his black coverall. Then he made his way past the rear gun turret and kicked open a small compartment door. His torch brought to light that which he sought—a fairly large wooden crate, carefully bound with steel straps and bearing the official government marking of the United States Army. In addition, the torch brought out the stenciling:

Aberdeen Proving Ground  
To Be Opened Under Official Orders  
Only.  
Ordnance Department  
U. S. Army

"Perfect," muttered the man in the scarlet mask. Then, after placing a small white card under a handy wall clip, he pocketed his torch, lifted the crate, staggered out with it, and shoved it up through the opening in the gun turret.

"Better come and give me a hand," he called to his aide who had shut off the Black Bullet's engine.

"Phwat in the name of all that's holy hav' ye got there?" came the query.

"You'll find out when we get back. Make it snappy!" And together they managed to get the crate along the pontoon, over the wing, and into the rear portion of the cockpit.

Then came the roar of oncoming engines!

"Let's get moving!" barked the masked flyer.

The man called Pulski forced himself under the crate which was leaning against his seat, and the pilot shoved the Black Bullet clear. Then, diving into the pilot's seat, he started the engine, kept the Skodas in, and eased her away. Once in the clear, he gave her the gun, lifted her up on the step, climbed into the sky—and flew smack into a three-ship formation of Army Douglas O-43-As!

Without a signal of any sort, all three opened fire on the Black Bullet.

The masked pilot darted the sleek black plane away. "You're too late," he sang out. "You birds missed up on this one."

The Douglas observation ships continued to blaze





away from every angle, but once the masked pilot had retracted his pontoons, their speed was insufficient to overtake it. Soon they were left far behind.

Within an hour the amphibian with its mysterious load was gliding down to a landing a mile or so off the east shore of Long Island, and when it had taxied up on the shore, a hidden switch was pulled and the fake rock garden of Graylands opened wide to reveal a hidden hangar. In no time at all the sleek amphibian was tucked away and the mysterious doors closed.

The Griffon had returned to his lair.

**I**T was ten o'clock next morning when the flyers of Graylands were aroused by the thud of knocks upon the front door. A disreputable old Packard of questionable vintage stood on the icy driveway, coughing its objections to a thundering race under forced draft.

John Scott, head of the F.B.I., New York division, had no illusions of his own grandeur, and he was loyal to this car that had been true to him so many years. It would have been very hard to replace, for it had been taken from a pre-repeal gangster who had had the foresight to equip it with armor plate. Said gangster had also provided shatter-proof glass and many convenient and secretive spots where the odd Tommy gun or pineapple could be stowed. A small but effective short-wave radio set was also included.

John Scott was a phlegmatic, heavy-set man jovial when at ease. He had won his present position through dogged courage, his ability to think in one channel for days at a time, and his dauntless belief in himself. True, he was not a spectacular operator, and he often seemed to be attacking a case from the wrong end. But somehow, John Scott always managed to fight down the lawless opposition.

He hammered at the door again with the butt of a heavy pistol and then listened to the pad of footsteps coming down a stairway. John Scott grunted, wondered by what form of magic a man who was supposed to be busy could afford to lie in bed until 10 o'clock in the morning.

Barney O'Dare finally opened the door, peered out. He had a copper tea kettle in one hand and wore a disreputable bathrobe of garish green.

"Where's Keen?" Scott said without further ado—and pushing Barney aside, he made his way in.

On seeing the gun, Barney nearly threw a left hook, but he quickly restrained himself when he recognized the visitor. "He'll be down . . . in a minute," he sputtered, "He's had a late night."

"I don't care anything about that," cracked Scott. "Get him down here fast. This can't wait!"

"Come into the library," invited the Mick. "But say, what's the idea of the gun?"

Scott plunked himself down in a leather club chair, gazed at his heavy black weapon as though he had never seen it before, then somewhat embarrassed he tucked it away in his big pocket.

"I'd forgotten that," he admitted numbly.

Barney tittered, then stepped aside as Kerry Keen entered.

"Don't get up," smiled the bathed and shaven Keen. "But what on earth got you out here at this time of the morning?"

"I couldn't get you on the phone. I've been trying all night."

"Matter of a little switch," explained Keen. "No want bother, just flick switch, as the Chinese might say."

"It's a good idea, of course," agreed Scott staring at the broadloom carpet. "But it's hell on your friends." Then he pulled out the gun again and shoved it toward the young ballistics expert.

"That's Lang's," he said bluntly.

"Keep it. I don't want *my* finger prints on it. Okay, it's Lang's. So what?"

"That's the gun that killed Regan Hatcher last night!"

"And who was Regan Hatcher—and why did Lang's gun kill him?"

"That's just it," came the reply. "We don't know who Regan Hatcher really was—and what's more we don't know what happened to Lang."

"Let's have it from the beginning. I can't stand this jerky-sentence business. Put the breakfast here, Barney," Keen continued, "with an extra cup for John. He looks as though he needs it."

"Thanks," said Scott, getting up and crawling out of his monstrous ulster. "I'll say I do! I didn't get to go to bed last night. Anyhow, I repeat that Lang's been missing ever since we found the hearse!"



"Hearse?" gasped Barney, almost dropping the coffee pot. "Phat the devil is this?"

"They got Hatcher, stole the body in the coffin, and . . . well, read it here in the morning paper."

Keen waved the paper aside: "I want it straight. Not the way it's dished up for circulation in the Ninth Precinct. You tell it, Scott."

"Last night just before midnight, this guy Regan Hatcher is driving a hearse up 38th street carrying the

body of a guy named Granville Hubbardstone. He's taking it to Grand Central to have it shipped back to some place in Massachusetts . . . Hubbardstone's old home-stead, I believe."

"Is Hatcher an undertaker?"

"No, that's what's screwy about it. The hearse belonged to a guy named Dooling—an undertaker over on the West Side. Dooling had the case and the body was all ready for transfer to the station. In other words, this guy Hatcher swiped the hearse and the body—and was bumped off on the way to wherever he was going."

"And the body?" asked Keen frowning.

"They knocked off this Hatcher, broke open the casket, and took the body. If that makes sense, you ask the questions."

"But Lang's gun?"

"That's the rest of it. The police got to the dying Hatcher just in time to hear him babbling something about Drury Lang—and there was Lang's gun in the gutter. Here's the bullet that killed him. You figure it out."

**K** EEN took the gun and the heavy lead slug. Then he went across the room, stuck the muzzle of the pistol into the opening of a long green metal box, and pulled the trigger. There was a muffled report and a thud somewhere within the box.

Scott sipped his coffee while Keen opened the firing box and fumbled with his long fingers through the cotton wadding. He finally found the slug, and brought it out, and inspected it carefully for some moments.

"I could have done that on Center Street," said Scott with a mournful mien, "but I wanted you to do it. What's the story?"

"First off, it's a .38 caliber Special 'Super-Police' cartridge slug. A 200-grain soft-lead bullet. A lovely 'stopping' slug, no question about it. Yes, and it's Lang's bullet that smacked that fellow!"

"For Lord's sake, don't say it that way!" growled Scott. "I didn't come here to be told that. I came . . . I



came, well, I don't know what the devil I came for."

"Lang's gun and Lang's bullet," taunted Keen. "He seems to have been the fellow who shot the guy. At least, he could have shot him."

"Sure he *could*. But why? We've got no such guy as this Hatcher on our crook list. And what the devil would he be doing with a dead body?"

"You can sell them . . . to medical schools," suggested Keen. "Have another cup of coffee?"

Scott held his cup out without answering.

"If Lang were only here," went on Keen, "you might get some idea what it was all about. But I suppose he's on the lam, as the boys say, since the murder."

"You're a big help," snarled Scott.

"That man, Lang" broke in Barney, "is capable of anything. I niver liked him at all—niver."

"No, and he never liked you. So you're both even," cracked Scott.

"He even thinks I'm the Griffon," said Keen in an injured tone. "He *still* thinks I'm the Griffon."

"Well, that's understandable. You're a queer guy, you know, Keen."

"But I don't go around shooting phony undertakers and swiping dead bodies."

"You don't *really* think Lang did that, do you?" asked Scott pathetically.

"Of course I do," answered Keen in the decisive tone of a stage villain. "But I suppose he'll slip out of it, like he does everything else. When he gets in a jam, he usually has the luck to be helped out by that Griffon guy. I wouldn't be surprised to learn some day that Lang himself is the Griffon!"

John Scott gasped.

"That reminds me," he said jumping up. "Where's that newspaper? See this—the Griffon again!"

"What's he been up to this time?" asked Keen with a disinterested air. Then he read:

### THE GRIFFON STRIKES AT OUR AIR SERVICE

Sky Ghost Downs Brazilian Sikorsky

Patrol Planes Fail to Stop Robbery  
Of Anti-Aircraft Secret

The body of the story gave an account of the finding of the Sikorsky amphibian and also a somewhat sketchy report on the loss of a new secret anti-aircraft predictor instrument used in range-finding.

"There you are! Lang is missing and the Griffon strikes again," said Keen tonelessly.

"I wasn't going to say anything about this anti-aircraft mess," Scott said, "but now it's out, and you might as well know something about it. That thing was supposed to have been stolen more than a week ago. Now they report that it was stolen last night. Furthermore, this Brazilian plane seems to have been mixed up in it."

"Um," mused Keen. "Perhaps they've stolen *another* one. They leave those things lying around all over the place, I suppose."

"No," said Scott. "They have only built one. And after testing it out, they were going to seal it up and stow it away—for a rainy day. Anyhow, it don't make sense. That thing was reported missing about a week ago."

"Lang was working on it, I gather," said Keen with a queer sniff in his voice. And when Scott nodded, he continued: "Well, go on and tell me about it."

"Oh, the anti-aircraft business? Well, we got the first report on it about a week ago. I'll have you know, too,

that this business is a bit complicated. There are really two parts to this A-A gimmick, and—"

At that, there was an audible gasp from Barney who was lolling near the fireside.

JOHN SCOTT looked around quickly, but Barney covered up by slapping at an imaginary spark. Still, Keen caught the drift of it and gave the Mick a quick and knowing glance.

"These two parts," the big detective went on, "are equally important. One is the predictor, a device which somehow automatically gauges the height of a target while the other sets the fuses on the shells as they are fed into the gun. It's far above my head. But anyhow that's the general idea."

"Was the predictor stolen a week ago?" asked Keen with a moderate touch of interest.

"Predictor? . . . Golly, I don't know. One of the parts was swiped then, but I can't say which one it was. All I know is that it had a certain number on it and was bound up in a long canvas bag."

"Then if they stole another A-A gadget last night, it's quite possible that it was the second important part, eh?" Keen asked.

Scott nodded and peered toward the fire: "That's the way it sounds now. Yes, I'll bet that's what happened."

"And now Lang goes and gets himself in that hearse-and-coffin mess and leaves you completely in the lurch! Nice guy!"

"That's what I really want to talk to you about," Scott now cracked.

"The anti-aircraft thing?"

"No—Lang. You know, the old fool really likes you, Keen. Anyway, I wish you could give me a hand in locating him and getting him out of this mess."

"What? After that?" Keen snapped pointing to the gun and the two slugs. "He's guilty, Scott. I want no part of it!"

Beads of perspiration appeared on Scott's brow. He started to get up but finally slumped down again and thrust his great hands into his pockets.

"Oh, well," Keen said opening the subject again, "maybe the case deserves my attention. True, I'm very busy. But if you want, I'll see if we can do something about it."

"We?" moaned Barney. "Leave me out of it! If that guy had the chance, he'd slap us into the klink so fast we'd never know what happened

to us! So I don't wanta take—"

Scott scowled. Then Keen went on without mercy:

"I really think Lang is mixed up in something phony. Barney's right. But for your sake, Scott, I'll have a whirl at it—provided we have a free hand and you ask no questions. By the way, is there any money attached to that anti-aircraft thing?"

"Well, if someone accidentally found it and turned it over to the right people, they might get a few bucks. But you just see what you can do about Lang—and I'll see that he lays off you in the future."

"All right. But no questions asked, remember. And when you get back to your office, look up the reward allowance on those anti-aircraft parts. We might be interested in that."

That brought a suspicious gleam to Scott's eye. But there was nothing he could do about it, so he nodded glumly and said:

"I don't know what the devil you are getting at, but never mind. You do something for old Lang, and I'll see

(Continued on page 80)





# WISCRACK-UPS

Taxi in on this runway and pick up a plane load of laughs! In this department, we present a collection of jokes, cartoons, and humorous verse. For all original contributions which we can use here, FLYING ACES will pay \$1. Contributions cannot be returned. Address all letters to WISCRACK-UPS.



"Quit your squawking! We broke the speed record, didn't we!"

## BUSINESS IS BUSINESS!

An auctioneer was trying to sell a batch of wartime Jennys.

"How much," he barked pointing to the first one, "am I bid for this plane?"

"Nothing," came a voice from the crowd.

"Sold!" shouted the auctioneer.

"B-but I don't want it," came back the voice. "I was only joking."

"Take it away, or I'll sue you!" cracked back the auctioneer. "You made a bid—and you can't back out now!"

## TRADE ITEM

Salesman (pointing to rummy sport plane): Why, I'll have you know we're selling these jobs by the dozen!

Wise customer: I don't doubt it. How much are they a dozen?

## QUITE UNDERSTANDABLE

Pilot Binks: London is the foggiest place in the world.

Pilot Jinks: Yer wrong. I've been in a foggier place.

Binks: Yeah? Where was that?

Jinks: Danged if I know! It was so foggy I didn't know where I was.

## KER-SMACK!

Ackemma (excitedly): Good gosh! Smith just landed and wiped off his landing gear!

Smith's snobbish mother (overhearing): Hmmm! I can't see why my boy needs to do such menial labor. Why can't the mechanics clean up his ship for him?

## HELPFUL

Tyro flyer: Good heavens, our controls are frozen!

Doctor passenger: Just rub them, my boy. That'll bring back the circulation.

## VICE VERSA

A dashing young fellow named Tim, Flew his plane with sensational vim.

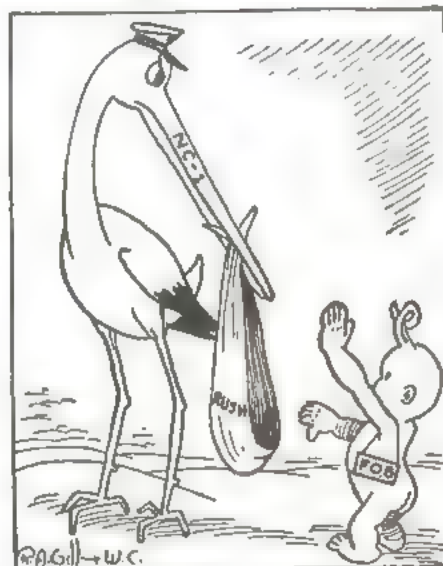
Said he: "I'm renowned For covering ground."

But, alas—now the ground covers him!

## LOGICAL CHOICE

"What are you doing in the Air Corps? I always thought you joined up with the cavalry?"

"Oh, I got m'self transferred. Ya see, an airplane may throw ya—but at least it don't walk over afterwards and bite you!"



"No parachute! Then I say to hell with it!"

## KEEP IT A SECRET

While walking over a pontoon bridge one day, Phineas fell into the river. And he was just going down for the third time when Captain Howell succeeded in hauling him out.

"Wow," gurgled Pinkham, "that was a close one! How can I reward you, Captain?"

"The best way," came back the leader of 'A' Flight, "is not to say anything about it. If Major Garrity heard I'd rescued ya, he'd bust me outa the service."

## TRAGEDY

Nick Bailey bought a tenth-hand plane, And fixed it up real nifty.

He scooted through the clouds in her And sped her up to fifty.

One day he tried to loop her— But woe betide poor Nick.

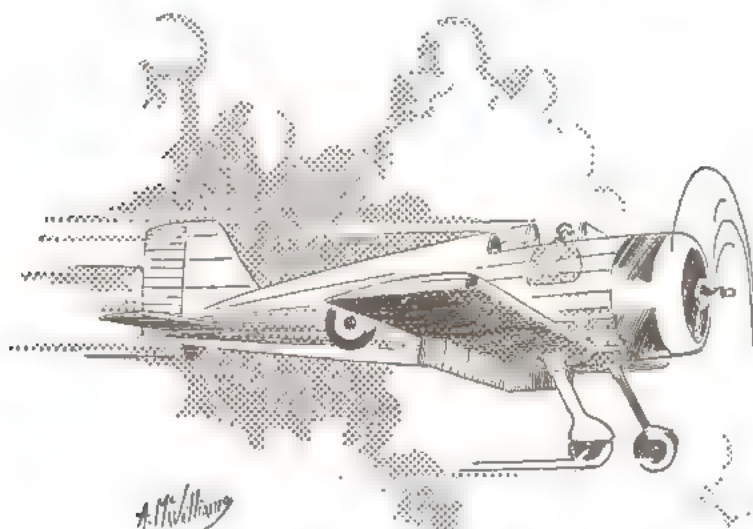
He f'got to hold the wings on While he pulled back on the stick!



"Pardon me, Captain—but would he play a request number?"



# Modern Planes Album



BRITISH VICKERS VENOM

## THE VICKERS VENOM

**H**ERE'S another of those appealing British planes with a name instead of a number—the Vickers Venom, which has been under construction for several months at the Vickers Aviation Works.

A light single-seater, this plane, from all accounts, will be an out-and-out interceptor for defense against enemy raiders. And when the British talk about enemy raiders,

they instinctively think of Germany and her ever-present threats to Albion's shores.

The Venom is equipped with the new sleeve-valve Bristol Aquila motor. And while not as powerful an engine as the new Rolls-Royce Merlin (which is now standard in the Spitfire) the Aquila is light and potent enough for a fast climbing ship such as the Venom will probably prove to be.

In the accompanying drawing, you will notice the square-cut wings and the smart closed-in cockpit with the extra window set below the level of the pilot's shoulder to give him full vision in all directions. The details of the armament have not been officially disclosed. We learn from reliable sources, however, that two fixed Vickers guns are carried in the nose. What's more, two special Vickers-Berthier guns are planted in the wings outside the prop-arc.

The wings are built on a cantilever metal frame and are covered with fabric. Lightness has been the watchword throughout the design of the Venom, for an interceptor must be able to climb—and climb fast. The undercarriage folds away electrically, disappearing into the wing roots. The wings have split trailing-edge flaps. And the prop, a new DeHavilland controllable-pitch type, is built in England under Hamilton-Standard license.

While the Venom has not been considered as a regulation fighter, the Vickers firm, we understand, has been ordered to keep a set of jigs and dies ready for quick emergency production under the "shadow" scheme, if necessary. The performance figures on this ship have not been made public.

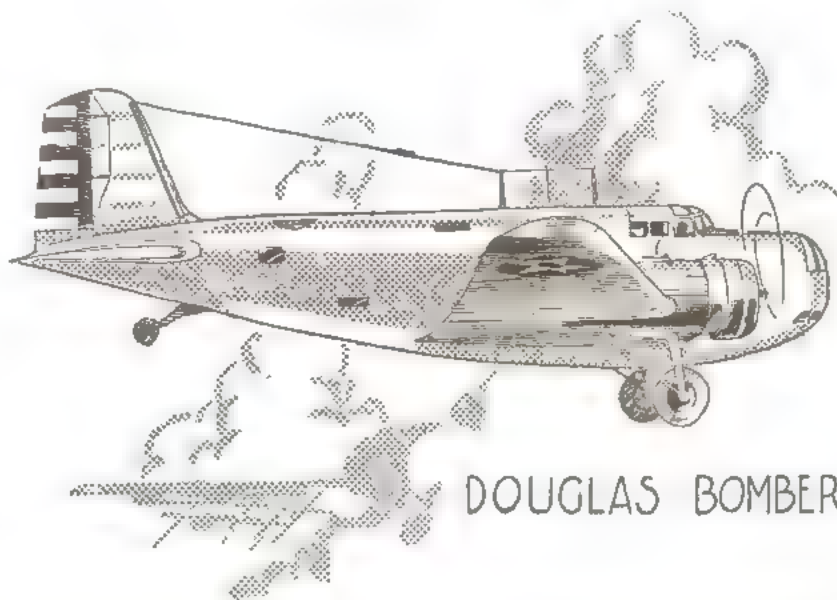
## THE DOUGLAS B-18 Bomber

**N**INETY of these vicious-looking battleplanes have been ordered by the U.S. Army Air Corps and a few have already been put into service. Originally, the planes were known as the DB-1 type, but since 1936, when they won the U.S. Bomber Competition against machines entered by Boeing, Martin and several other well-known firms, a few minor changes have been made and the numerical designation changed to B-18 because of them.

In general, the B-18 is a splendid example of what might be done with a commercial transport; for this job, we understand, was originally based on the general lines of the noted Douglas airliner. You have probably noticed the greatest change already—that the B-18 is a mid-wing monoplane, whereas the DC-2 and DC-3 are both low-wing machines.

There has been a considerable change about the nose, too, to accommodate the gun turret and bomb-release equipment.

The B-18 today uses the 1,000 h.p.



DOUGLAS BOMBER

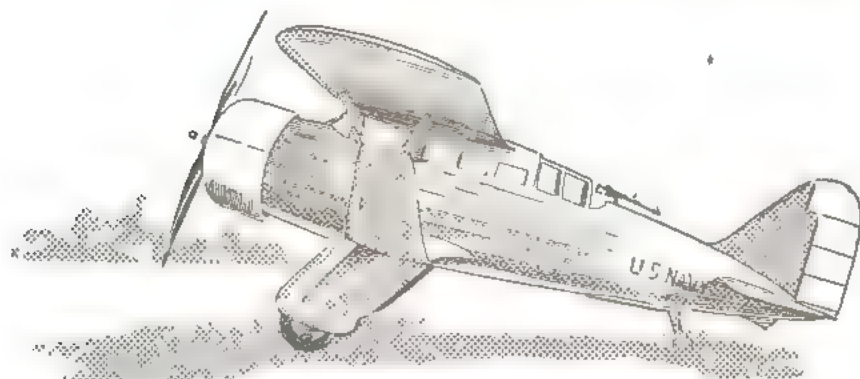
Wright Cyclone engine, and has a cruising range of about 1,000 miles. According to observers, she does 225 m.p.h., top, and she's particularly handy in typical bombing maneuvers. The bombs are carried in a large space in the forward part of the fuse-

lage, and on release, two trap-doors open in the belly and the projectiles slide from the racks. The general arrangement of the gun emplacements is said to be very good, and the B-18 consequently seems to offer no blind spot above, below, or behind.



## PRESENTING FOUR NEW SKY-BATTLERS

A brace of bombers, an interceptor, and a new naval scout are the craft housed in our display hangar this month. The bombers—the Douglas B-18 and the Junkers Ju-86K—are from the shops of American and German manufacturers, respectively; the Interceptor is a lively little British craft; and the Navy scout is a neat Bellanca.



BELLANCA XSE-1

### THE BELLANCA XSE-1

**A**FTER successfully building a giant bomber which seems to have won favor in many foreign countries, the Bellanca outfit has turned to a smaller scouting ship for Naval purposes. It is known as the XSE-1, and it appears to be a plane designed for the peculiar demands of aircraft carriers.

Outside of official circles, very little is known about the plane. It is obvious, however, that Bellanca is making an effort to grab some of the Vought Corsair trade and to capture a little of the multi-seater, all-purpose business which the Navy now

seems to be going in for strongly.

The new Bellanca incorporates the typical Bellanca faired-strut sesqui-plane idea. The arrangement is interesting, for the wing-bracing struts are partly covered—which, while adding a certain amount of lifting surface to the ship, also provides a fairly wide “blind” area in the vision line running from the pilot’s cockpit to the area below.

From the general appearance of the fuselage, it is quite possible that there is accommodation for a pilot, an observer, and a gunner.

There is a hook attached for the arrester-gear, and the undercarriage

is built into the lower sesqui-wing section and covered with a stream-line fairing.

The ship is powered with a Wright Cyclone engine, but we have no official performance figures. For armament, the pilot has two fixed .30-caliber Browning machine guns, and the gunner uses a single .30-caliber gun on a high-speed mounting which folds away when not in actual use.

From a general study of the ship it would appear that this plane is an adaptation of the Bellanca “Airbus,” and considering the required service load, the engine, and other features, it is hardly likely that the XSE-1 will do much better than 200 m.p.h.

The equipment usually demanded on a plane of this type includes two-way radio, camera mounting, parachutes, flotation gear, automatic fire-fighting equipment, and possibly air rafts.

There is no question but that the XSE-1 would make a good all-around scouting plane, and one that could well perform many Navy service duties—but we believe that the strut sesqui-wing, because of the resultant reduced vision, will not bring many cheers from the men who have to fly her under service conditions.

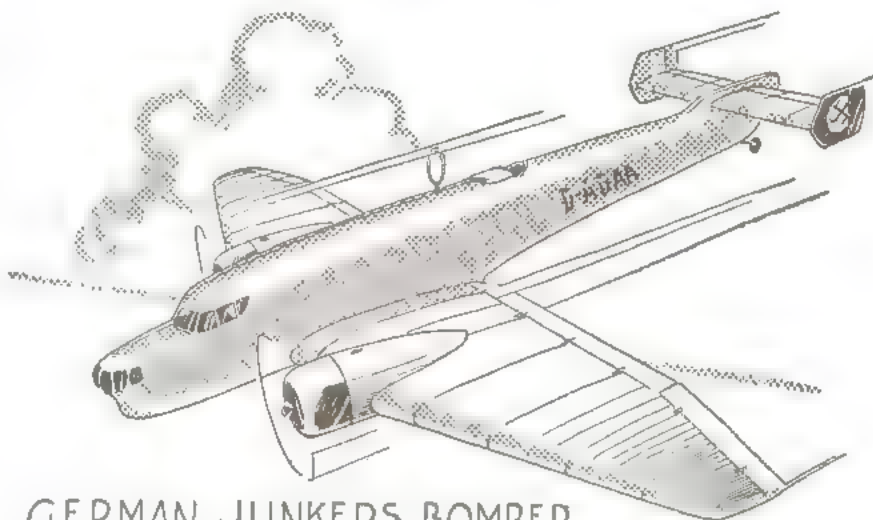
### THE JUNKERS JU-86K BOMBER

**T**HE German air service is the dark-horse outfit of the flying world today. No one seems to know exactly what is going on beyond *Der Rhein*, although every aviation writer professes to have “just received the real lowdown.”

And while new and “more devastating” German types are being shown in the news reels and picture pages, we seldom get anything really authentic on the performances of these ships or their actual details.

Take this new Junkers Ju-86K bomber, for instance. Pictures of this plane have been shown in dozens of European magazines, and it has been variously listed as a long distance bomber, a flying ambulance, and a military dispatch carrier. In some reports the two engines are BMW motors of 880 h.p. apiece, while still other stories say that the motors are Junkers Jumo Diesels.

But at any rate, the report we get on the ship shown here is that it is a high-speed night bomber which carries a crew of five, has three ma-



GERMAN JUNKERS BOMBER

chine-gun emplacements, and a top speed of 242 m.p.h.

The span of the craft is 73.8 feet, the gross weight is 18,070 lbs., and the empty weight is 12,800 lbs.

From an inspection of a series of photographs, we find that the 86K is a normal mid-wing monoplane of the

accepted type. The body is streamlined monocoque in design, and it is probably all-metal. The ship in general looks like the Boeing bomber might with a Lockheed tail.

The nose has the modern shielded turret, and there are two more turrets behind the center of the wing.



# All Questions Answered

This section of FLYING ACES is at your service. So if you have an aero query, fire away and we'll answer it here. All questions will be considered in the order they are received. For a personal reply, send stamped, self-addressed envelope.

• • •

**Douglas C. Atkins, Washington, D. C.:**—There are no fabric-covered parts on the Boeing Bomber. Yes, electrically-ignited projectiles were fired from certain Nieuport ships to ignite balloons. They were known as Prieur rockets.

**John C. Eldredge, Cobleskill, N. Y.:**—I do not know what is done with obsolete training planes in the U.S. Army. Why not write to the Air Corps Headquarters in Washington, D. C., and inquire? I plan to look into it, but that would bring you your answer more direct.

**Charles Taylor, Derby, England:**—The initials A.W.O.L. mean Absent Without Official Leave. The present world's altitude record—53,937 feet—was made in a Bristol monoplane. The world's seaplane speed record is 440 m.p.h. It was breezed off by the Italian Macchi-Castoldi racer. That's the fastest an airplane has ever been flown.

**William H. Cot, Chicago:**—The Italian fighters in the picture you sent me are apparently Romaro single-seaters, and the Russian single seater is probably the noted Rata fighter. But your pictures are so small and indistinct that it is difficult to make a positive identification.

**Leonard Oliver, Portland, Oregon:**—Your idea for a safety device for air transports probably would get no consideration by any air line. In the first place, they seem unwilling to consider carrying parachutes; secondly, I don't think they would look with favor on anything which would add so much weight to their present loads.

**Frank Markey, Charlotte, N. C.:**—As far as I know, there are no height limits on recruits for the Army Air Corps or for the Army. Regarding your other query, most of our advertisers have announced models of the Taylor Cub.

**Junior Lester, Colebrook, N. H.:**—A monocoque fuselage (usually oval shaped, somewhat like that of a fish's body) means a fuselage that relies

on the strength of the skin or shell to carry the load. The only reinforcements are the vertical bulkheads spaced at intervals. There is no framework. Camber-changing flaps refer to controllable flaps which change the wing's curvature. In take-offs and landings, the camber, you see, is changed to increase the lift. Single-bay means having only one set of interplane struts. The bay here, is the section between the fuselage and the wing struts. Thus if there were another set of wing struts, it would be double-bay, with second bay set off between the two sets of struts.

**E. C. Toleman, Augusta, Ky.:**—The information you require would not be given out by the Army Air Corps. That's the story on all questions concerning the details, speeds, and specifications of the latest service craft. We can't get that info either.

**Charles Sidlowski, Brooklyn, N. Y.:**—Some time ago we carried full information on the apprentice system used at the Luscombe Airplane Corporation, of West Trenton, N.J. You might write to them and get the latest information on the plan.

**Ed Markowitz, New York City:**—You can get a private ticket if you have only slightly defective eyesight

—but you must wear goggles with corrective lenses, as we have told so many readers before. See your nearest Department of Commerce physician about it before taking any further steps.

**Leon Grogg, Pontiac, Mich.:**—To our knowledge, no radio controlled gas model has been put on the market. As a matter of fact, a really successful and fool-proof radio controlled model has yet to be devised. Suggest you look over Jesse Davidson's article on radio controlled gas models in our July 1937 issue of FLYING ACES.

**Ken Corder, Denver:**—Neither the Camel nor the S.E.5 did anywhere near 150 at the close of the war. No. 1 Squadron R.F.C. went out with several types of planes in 1914, including B.E.'s, Farmans, and a few Morane and Bleriot monoplanes. It was not the first Squadron to go to France. No. 3, which had that honor, was first quartered at Maubeuge with much the same equipment. They arrived there on August 13, 1914. Major McCudden was a mechanic in the outfit. At that time he served between crashes as a gunner (armed with a .303 rifle).

**Warren Bennett, Clarion, Pa.:**—I most certainly would like to see that article on a Fokker D-6 fighting an Italian S.V.A. on the Western Front. I never knew there were any Italian fighters on the Western Front. I feel sure that any of our advertisers would be happy to advise you on the specific model questions that are bothering you.

**M. W. Carder, Chicago:**—I do not know why the Hat-in-the-Ring insignia of the 94th Pursuit Squadron has been changed to the Indian Head design, unless it was to avoid the use of anything having a portion of the flag in it. You remember the hat was made up in a Stars and Stripes design. The flying garment you refer to was the Sidcot—an all-in-one suit. I do not know the rest of the history of Voss' checkerboard design after his death.

BY ARCH WHITEHOUSE

## And Now We'll Ask You a Few

- 1—What motor does the new Aeronca plane use?
- 2—What is the difference between a private and an amateur license?
- 3—Where is the Porterfield plane made?
- 4—What type control gear is used on the Monocoupe 90-A1?
- 5—What is the price of the Waterman Arrowbile W-5?
- 6—Name the main difference between the Taylor Cub and the Taylorcraft?
- 7—What Mid-West light plane uses the Ford V-8 engine?
- 8—Name two popular American light plane engines whose names begin with "L."
- 9—What wood is most commonly used in light plane wings today?
- 10—What is the average top speed of American light planes using the Continental A-40 engine?

(Answers on page 96)



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## When Will the Designers Wake Up?

## A Reader Tells How To Form A Club

• • •

# On the Light Plane Tarmac

• • •

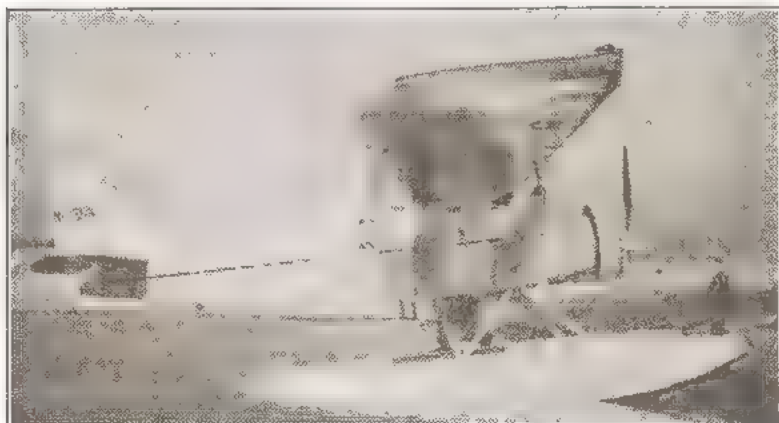
### WHEN WILL THE DESIGNERS WAKE UP?

**W**E have been looking over the sport craft a little more closely of late. And we've discovered that you certainly can't learn everything about the planes from a close inspection of the catalogs and detailed accounts of the ships in the technical magazines. Indeed, no two aeronautical writers seem to agree on a ship any more than do two eyewitnesses of a hold-up on the size, number, or general appearance of the gangsters.

But regardless of the variety of opinions, we think that all the forward-looking observers will agree that some sort of construction standardization must come if we are to induce the masses to fly. The problem is to find some forward-looking designers who appreciate that fact. We've personally looked over about seven representative light planes, and we could find no two that offered a really standardized style of cockpit.

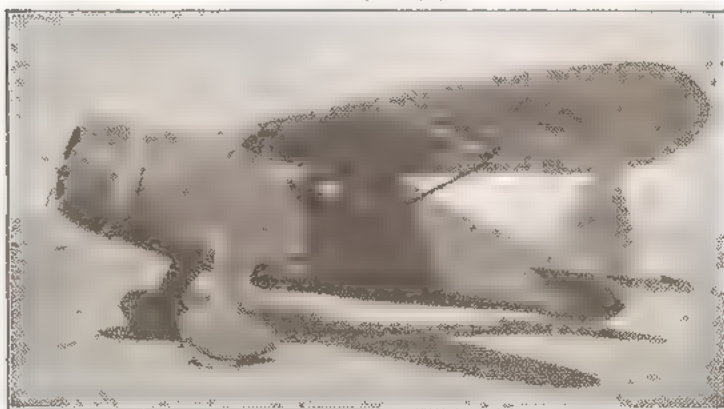
If such nonsensical variety was offered by the automobile industry, what a squawk would go up! If a car maker decided that next year he would put the steering wheel over on the right instead of on the left, we doubt if he'd sell more than ten per cent of his regular production. And if he changed the clutch pedal over to the right foot, he wouldn't sell that many.

Yet some of the arrangements that we've noticed on our current light planes are hardly more surprising.



While this Bellanca CH-400 can hardly be classed as a light plane, amateur aviators who plan to get "something bigger" in the future will find it of interest. A striking pontoon job that's ruggedly built yet sleekly lined, it employs the 450-h.p. Wasp engine. It'd be great for the family, what?

For you light craft fans who so loudly applauded Benny Howard's "Mister Mulligan," here's a commercial version of the same job suitable for sport flying. Listed as the Howard DGA-2, it mounts a 320-h.p. Whirlwind, cruises at 182 m.p.h., accommodates a pilot and three passengers, and includes space for 130 lbs. of baggage.



We accept the fact that the sport plane designers are yoked with various limitations. They are allowed only so much money to produce a plane to sell in a specified price range—a plane that will boast the power and speed demanded by the customers and at the same time conform to the licensing restrictions of the Department of Commerce and look sleek and dashing.

But though we appreciate the tough problems facing the designer, we cannot see why, for instance, a standardized instrument board cannot be devised. It now takes a skilled pilot several minutes to figure out the "lay" of the instruments on a ship that's new to him. Emergencies can easily be conceived where this lack of standardization might cause a pack of trouble—might even be the difference between safety and a crack-up.

Then again, we find that most planes have their throttles in different positions and not infrequently in the most unhandy part of the cockpit. And as for tail-trimming gear, some designers have succeeded in setting the wheels at points that would even make a contortionist want to give up and take to the silk. Then again, in instances where radio sets were installed, many of the cock-pit layer-outers must have sat up nights trying to find the most inaccessible positions for the sets.

The number of different control systems now in use would make the average man stagger off flicking black spots from the front of his eyes. They come in all shapes, designs, and degrees of complexity.

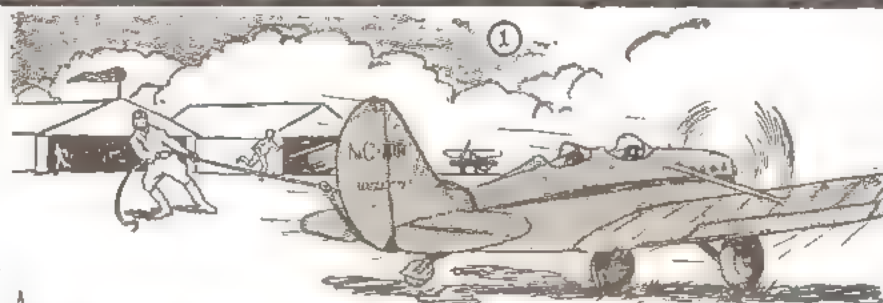
**L**ET us suppose, by way of example, that Mr. A has been taking flight training on a Spider Flat-Four. (No, there isn't any such ship, so don't ask us for the specifications, blue-prints, and the color of the leather on the seats so you can make a model of it.) Having already knocked out sufficient hours of dual, Mr. A then gets in some solo time, grabs his ticket, and goes out and buys himself a new Spitfire-Six (which is likewise a fictitious plane) and has it delivered to his home field.

But imagine his amazement and utter hopelessness when he attempts to take over! In the first place, the door is probably on the other side. The stick looks something like an Oriental fakir's hooded cobra—and equally as threatening. He finds the throttle, after study-



# PILOTOPICS

By ROY HUMPHRIES



AIR COWBOY'S LASSO STOPS  
RUNAWAY PLANE...



"RIP-CORD" TAYLOR,  
WAS HIS FACE RED?



4½ MINUTES FOR A  
3 MINUTE EGG...



AH, A BUG OF  
SOME KIND!

THE PELICAN, WHO CAN HOLD MORE IN  
HIS BEAK THAN HIS "BELLYCAN"—BIT  
OFF MORE THAN HE COULD CHEW!

Roy Humphries

## Stories Back of the Above Pictures

1—WHEN Zeki Dervend swung the prop on his sport monoplane at Floyd Bennett Field the other day, the craft abruptly knocked him down and raced crazily over the airport. But Chief Petty Officer John Schwartz, of the Naval Reserve, was "on deck" to prove that ranch hands aren't the only hombres who are handy with hemp. He quickly tossed a noose over the tail of the loco sky bronc—and halted it!

*A case where no noose woulda been bad news.*

2—COLD SWEAT broke out on the forehead of Private John W. Taylor when on awakening from a pleasant cloudland sleep recently he discovered that the bombing plane in which he was riding was dropping steeply toward the earth. Frantically he bailed out, leaving Pilot Paul Ashworth to ride the falling bomber on in. And now Taylor's Chanute Field buddies laughingly call him "Rip-Cord" for the truth of the matter was that Ashworth was simply landing the plane!

*Not sleep-walking—but sleep-jumping!*

3—BECAUSE the temperature at which water boils decreases as altitude increases, it takes four-and-a-half minutes to cook a "three minute" egg in a plane flying at 12,000 feet. Four minutes are required at 9,000 feet, three-and-a-half at 5,000 feet—and probably no time at all where Satan holds forth.

*But just try to boil an egg in Heaven!*

4—SMACK into a speeding attack plane flew one of those strange denizens of the sky, a pelican, during recent Army Air Corps maneuvers. The body of the ill-starred water bird smashed the plane's windshield, knocking Pilot Nelson Brown unconscious, then whipped on back and bent the craft's elevators. Fortunately, Private Frank Barnett was able to keep the plane on an even keel until Brown recovered his senses.

*If it's a fish, a pelican. But if it's a plane, a pelican!*

ing the book for fifteen minutes, and then he looks for the gas cocks. They are probably under the seat, which almost cuts his hand off when he tries to move it. He didn't have a movable seat in the Spider, and this new arrangement in which to place his personal empenage looks like something Louis XV went in for.

Well, he finally gets the juice turned on and someone twirls the prop. And now he peers about for the tachometer, but the space where the tachometer used to be on the Spider is now occupied by a tin clock which somehow is recording Greenwich mean time instead of Eastern Standard. In despair he seeks the oil-temperature gauge, and he finds the spot taken by a new type magneto switch which looks like a gimmick off Aunt Amantha's vacuum cleaner. He has no idea where the dash light switches are because they have been disguised with push-pull buttons that look like screws to keep the instrument board in place.

Is it any wonder, then, that our Mr. A is disgusted as all get-out? And what happens when he first takes to the air? Well, everything is bawled up for him. When his first landing in the new bus turns out to be a minor (but expensive!) crash, it's wholly understandable. And it probably happened when he tried to get his hand on the tail trimming wheel which the Spitfire-Six designer had neatly hidden somewhere behind the luggage compartment. There may be more minor (but expensive!) crashes before he really gets used to the ship.

All this, of course, is an exaggerated account of what might happen—but at least it gives you the idea. The point is that our light plane manufacturers better get together on this cockpit arrangement business or they'll have a tough time selling their planes in any great number. Standardization put the auto over, and the aircraft makers should have learned that lesson long ago.

## How To Form A Club

OUR \$2.00-winning letter this month is from Thomas E. Dodd, of Blythe, California. And it contains details on how he and a group of men about his own age (he's 21) got together and formed a flying club.

We like the straightforward manner in which Tom writes, and in his lucid statements we find the answer to a very pressing problem—how to start a real sky-going flying club.

Tom is the publicity chairman of the Aviation Club of Blythe, and he explains that he is not writing his letter so much for the two-buck check as for the opportunity to tell the

(Continued on page 91)



# HAPPY LANDINGS

BY ARCH WHITEHOUSE



## The Strange Case of the Bounding Balloon

• • •

**O**UR friends the newspaper boys were handed a swell story a short time ago—and did they eat it up!

You will perhaps remember that a British Royal Air Force kite balloon, which had been sent up with several others as part of one of those new "balloon barrages" to protect London from raiding airmen, broke away and went sailing gayly across the English channel, dragging along a great length of its steel cable.

At first, the R.A.F. simply laughed the whole thing off. The balloon was lost—and that, they figured, was the end of the matter.

But it turned out that they laughed too soon. For right after the sun did its usual sinking act in the west, a loud wail went up from the Pas de Calais section of *La Belle France*! Something had happened to their electric lighting system. Not a bulb would work, not a motor would turn. Streets, houses, jails, and churches were in darkness. And hospitals which had no private emergency lighting facilities were left helpless, their patients frantic and their surgical services crippled. What's more, factories were halted in their production of shells, riding breeches, baby carriages, *ad infinitum*. And neighboring airports had no floodlights to guide landing airmen, nor any hangar bulbs working for service illumination.

In short, that little balloon, which had cost but a few hundred dollars, had done about as much damage as a flock of raiding bombers!

You see, in dragging across high-tension wires of main electric systems, the trailing steel cable of the run-away kite bag had completely blackened out whole areas. It took several hours for the system to be repaired to enable the various community activities to get moving again.

And after it was all over, the rueful R.A.F. officials had to dig deep in their sky-blue trouser pockets and foot the bill.

**N**EVERTHELESS, there's a striking sequel to this story. For after the said R.A.F. aeronauts returned to their hangars and balloon sheds, it suddenly dawned on them that they "had something there." The substance of their argument was: "If one balloon with a single trailing length of cable can do all that damage, then if we hooked up a whole chain of them we'd have a really destructive military weapon! And if we ever get into another war with Germany, we could let the prevailing westerly winds take a bunch of those destructive cable-trailing balloons right plumb into Naziland!"

Thus, *good* use would finally be made of those cursed westerly breezes that World War Allied airmen had such a hard time bucking when attempting to get back to their home dromes after "shows" over German territory.

Just picture a full apron of steel-tailed balloons floating across a warring nation in the dark of night! There would be no roar of engines, no bellow of big guns, no tread of marching feet—but without a word of warning a crippling scourge would strike the land. Electric power arteries—absolutely essential in times of war—would be cut, giant factories would be crippled, and the civilian and military masses would be deprived of needed light.

It would not be permanent damage, we grant; but a considerable amount of time would have to be expended in finding and repairing the breaks. Meanwhile, the opposing forces would take advantage of the balloon blow by making a series of terrific battle thrusts by land and by air.

Of course, such a balloon chain could not be guided; and a number of defenses that the target country might employ readily come to mind. Yet, the idea does have numerous possibilities, and it would be so inexpensive that it might well be worth trying.

So we still don't know who's going to get the last laugh in "The Strange Case of the Bounding Balloon."

## New Aero Text Hits the Spot

Volume Explains "Deep Stuff" in Simple Language

• • •

**A** NEW technical book on aeronautics has just been slipped into our FLYING ACES bookshelf—a volume we heartily recommend for every reader who is really planning a future in aviation.

Granted, the work bears no flashy title; it's simply dubbed *A General Text on Aeronautics*. But it would be

hard to beat it for substantial, meaningful aero information.

The author of this volume is Hilton F. Lusk, professor of aeronautics at Sacramento Junior College and former Dean of the Boeing School of Aeronautics. It is published by The Ronald Press Company, 15 East 26th Street, New York City, and it sells for \$3.25.

The text of the book, which runs to 420 pages, is splendidly backed up with 175 illustrations. And at the end of the book are 226 questions, all typical of those asked in examinations for the Department of Commerce trans-

(Continued on page 90)



# Flying Aces Club News

You've heard of ladies' "Sewing Bees," fellows—and how the word "sewing" usually meant "saying" because everybody was doing just that at one time. Well, the needle pushers have nothing on Clint. For this old sky-strutter is getting garrulous in his ancienry, and when he starts talking it's 'most impossible to kill his engine. But it's all good gossip, clubsters. For when he talks, his main topic of conversation is you—and you—and you!

• • •

## By Clint Randall

*National Adjutant, Flying Aces Club*

**B**RRRR! Yep, fellows, winter's here in earnest now. And it sure is cold! But regardless of the scanty seasonal service ceiling of the mercury (Wow, what a tongue twister!) our F.A.C. members report that they're makin' out in top-flight fashion!

Take, for instance, Glenn Clearwater and his way of passing a long winter evening. Glenn is located where they really consider zero warm. And here's what he has to say:

"Clint, we're still in the mining camp up here at God's Lake, Manitoba. And since most of the boys here are already F.A.C.'s—and I'm enclosing coupons for a couple of new members—we're thinking of forming an official flight or two. We've been doing some model making lately, incidentally, and I have completed two solid jobs—a Douglas transport and a Boeing P-26A.

"All the fellows around the camp and also the pilots of the Wings and Canadian Airways outfits—with whom I get quite a few hops—say that F.A. is sure 'the stuff!' And we've decided that the best fun of all is to sit indoors near a ragin' log fire with a copy of FLYING ACES in our hands—while there's a roarin' blizzard and 60-below temperature outside."

Doesn't that sound like the perfect prescription for winter evenings, gang? And let's hear more about those F.A.C. Flights, Glenn. Also, how about a picture or two from up your way?

Speaking of pictures, here we go with an S.O.S.—or a cry of *Mayday!* if you'd rather have it the radio-telephonic way. Anyhow, fans, we need pictures for this here Club News.

Every month, lately, I've had to 'scoot and hustle about' to get proper 'art' to go with my gossip. For few of the flights or squadrons seem to be coming through with many photos these days. This trip I didn't have a single snapshot in the files that I could use—until yesterday when Fate flicked her photographic finger and I received the pictures we're printing on these two Club pages.

So make it a point, flights, squadrons, and individual members, to shoot me some of your snaps. Don't bother about the sizes and don't send me the negatives. Don't bother about enlargements, either, except in the case of "minny" shots. Just see that the pictures are well-focused and clear, and that you and your gang stand out sharply against the backgrounds. The subjects of the pictures can be almost anything at all so long as they concern you



Skysters, here's Captain William Forbes, F.A.C., D.S.M., who represented our F.A. outfit on the recent 'pilgrimage' to Europe made by the American Legion Bull's F.A.C. wings and his D.S.M. medal can be seen, if you'll look carefully, over his breast pocket. The picture was snapped in the cabin of a great K.L.M. airliner at Amsterdam Airport.

and other F.A.C.'s and have some general aeronautical significance.

And now that's off my chest, I'll tell you about some swell shots I *did* receive, but which, unfortunately, I couldn't use because they weren't quite sharp enough for reproduction.

Wally Bickmire, F.A.C., D.S.M., of St. Marys, Pa., is the chap who sent them, and they illustrate the type of the activities for which Wally was awarded his medal. For Wally, with the help of Otty Lenze and Jim Auman, has been building swell window displays that have done a lot toward promoting aeronautical interest in his home town. The displays have been made in the stores of newsdealers and model supply houses.

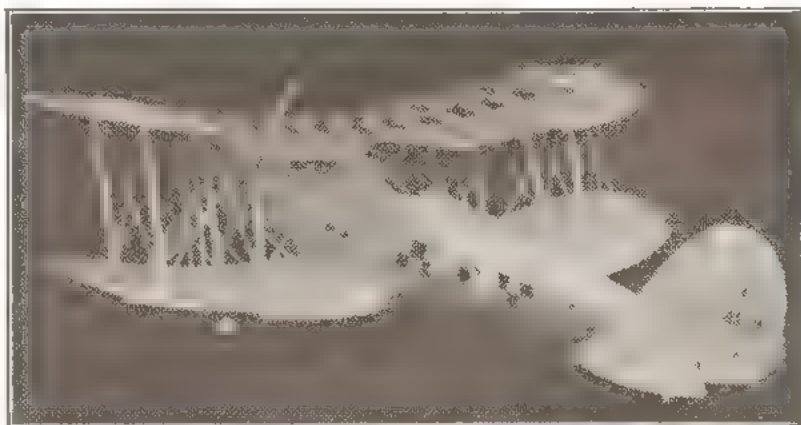
One excellent set-up occupied the whole of a large window in a downtown store. The floor of the window was covered with dark green crepe paper to represent grass, and a good-sized hangar with a nearby racing pylon was erected

in a corner. A speedy-looking monoplane model was rounding the pylon on a wing-tip.

Toward the front of the window and spotted at various points on the "airport" was a fleet of some dozen neatly-made models of various types all identified with labels. And an assortment of FLYING ACES Magazines with pages held open showed various fact and fiction features and the articles and plans from which some of the models were made.

Topping off the whole display was a board bearing the Flying Aces Club's insignia and decorations together with a large, symbolically designed poster bearing the words *Join the Flying Aces Club*.

Coincidentally with the public display in the store, the St. Marys newspapers ran a series of short feature stories about the national set-up of the F.A.C. These had



Made by F.A.C. member "Unk" Collinson, of West Drayton, England, this such model of the Gloster "Gauntlet" has a span of 30 inches and every possible detail that could be included in a model of its size. "Unk" put in 180 building-hours on its construction! He is, by the way, a member of England's famous 'Three Jokers' entertainment trio and can spin some swell yarns of British main hall life. I'll shoot his address to the first four letter-writing F.A.C.'s who send in a stamp for it.



been written by Bickmire and his friend, Otty Lenze.

Excellent work, fellows! And perhaps in these paragraphs about your show, other F.A.C. members throughout the country will find an idea or so for use in their own communities.

**A**ND NOW here's another S.O.S! I wonder how many of you clubsters noted the ad about Bill Weaver, of Pittsburgh, which ran on page 85 of our February issue. Turn to it again and memorize it—*right now*. And then, if any of you should run across Bill around the airports or elsewhere, call his attention to it without delay. You might even get permission to post the ad on the bulletin board in the pilots' room of the local airport, first pasting it on a sheet of white paper and marking it with the name and date of the magazine. But your main job is to keep an eye peeled for Bill.

While we're on this "missing persons" topic, skysters, here's another chap for whom you can reserve an alert eye, too. James George Harry Braid is the man, and he fought with the 42nd Canadian Highlanders during the World War. Mr. Braid was a close friend of F.A.C. Pilot E. J. Battle and his parents, of Leicester, England. But some years ago he disappeared, and the Battles are extremely anxious to contact him again. So should any member know Mr. Braid—and he was last heard from, incidentally, in Montreal—you'll be doing Pilot Battle a big favor if you'll drop him a note through GHQ.

Say, here's a sky-writer-to-be who is certainly on his toes—Bob Laughlin, 12, an F.A.C. member who lives in Leonia, N.J. The other day I ripped open a fat envelope from him and out dropped—no, not the expected letter—but a miniature FLYING ACES Magazine made up by Bob himself. He'd done the larger lettering by hand, and the rest of the text was typed. And there were regular chapter-headings, "two-line caps" to separate sections of the stories, and even swell action pictures spotted in with pen and ink.

Bob's feature article was titled "Aero Modeling," and it was a story that would make *any* chap want to haul out his balsa and glue. Even for a professional writer, the job would have been a good one. In fact, I showed it to our model editor, and he was greatly interested in it. But he couldn't reprint it due to lack of space for some months to come. Too bad, Bob!

But you can feel mighty proud of your work.

Remember me telling you last month about the proposed Air Show for the forthcoming Golden Gate International Exposition at San Francisco? Well, here's some dope I just received concerning the development of the North Beach Airport at New York in preparation for the big World's Fair which will be held in New York next year.

The Airport right now covers only 105 acres on the edge of Flushing Bay. But by the time they're through with it for the Fair, it will cover 420 acres and will have facilities for the safe landing of the world's largest land-planes and ocean-spanning clippers. Visitors to the Fair from overseas, for instance, will land almost at the gates

of the Fair grounds! There's *real* service for them!

More than \$12,000,000 is to be spent on the airport. And that's a pile of money on *any* tarmac! There will be four concrete runways up to nearly 5,000 feet in length, all set in a rough star-shaped pattern. And there'll be three sea "runways" each four miles in length, dredged out and marked with buoys for the take-off of heavily-loaded planes. Radio direction beams for "all-weather flying" are to be installed also. And immense hangars and administration buildings are to be built immediately for both land and sea departments.

I was out at the airport just recently, watching the vast amount of work they're doing there. And it's fascinating! It's sort of prophetic, too, for these plans and preparations for a new, entirely different kind of airport than any of us yet know much about, give an intriguing glimpse into aviation of the future.

**S**AY! We seem to be running a special emergency column this month! Here's our old pal Bill Fouts again, from Fort Worth, Texas. Bill's anxious to bring his FLYING ACES library up-to-date, and he wants some back numbers. And he says he'll pay good prices for the ones he needs (Hey, Herb—we got any back numbers? Awright, awright, I was only *asking*. You don't have to holler "NO!" so loud-like!)

Anyway, Bill needs all 1935 issues except April, July, September, and December, and of 1936 he needs February, March, May, June, and August. If you can help him out, write him direct—his address is 3221 Fitzhugh Ave., Fort Worth. But be sure your available copies are complete with covers and inside pages in good condition.

And now from San Antonio, Tex.—the home of Uncle Sam's Kelly Field—comes a report signed by Jack Sheerin, skipper of F.A.C.'s Flight A. Jack's outfit is all uniformed, I understand, and Jack keeps the chaps on their toes. For collar ornaments, the Flight is now using regular F.A.C. initials shaped in brass on the style of the Army's "U.S." insignia. They look swell, too. Jack forwarded a set for official approval.

Up from New Plymouth, in Taranaki, New Zealand, comes a report that F.A.C. member Harold Mundt is planning to form an official Flight. We're with you, Hal, and you have our 73's in your attempt. And by the way, Taranakians, it would

be a good idea for you to contact Hal at 50 Eliot Street.

While we're "down under" we might as well hop over to Australia, where Win Andrews, of 1 Arthur St., off Ipswich Rd., Buranda S2, Queensland, is also starting a Flight and wants local lads to contact him. Win's been air-minded for quite some years and knows his facts and figures. He's a live model fan, too—and he tells us that F.A. is Australia's favorite modeling mag!

Back in America again, we'll look up F.A.C. Cadet Larry Plummer's report from Milwaukee, Wis. Larry is Keeper of the Log for Flight A of his city, and turns in the information that six new chaps were enrolled at a single meeting recently. Swell business, Flight A!

And right here, skysters, I want to express my ap-



From Ervin Schweig—the Milwaukee F.A.C. member who made this swell water-color of a sunburned Phineas—we understand that the Boonetown Buster himself asked that this picture be made. My! What strong tea you must drink, Erv! Anyway, the artist claims that Lieutenant Pinkham was sitting in the cockpit of his invisible craft when the brushes were dabbing down his likeness on the canvas! But where did you get that sunburn, Phineas?



preciation of the big stack of Christmas and New Year greetings that so many of you helped pile up on my desk. I'd like to acknowledge each of them individually, but because there are so many and we're under such heavy pressure of work here at GHQ, I'll have to thank you all for them in this manner.

And that goes for you chaps who sent cards and remembrances from England, Australia, New Zealand, India, South America and South Africa, Ireland, and all the other places, too! Thanks a lot, gang!

I AM going to devote the rest of the Club News space this month to the report of Captain William F. Forbes, F.A.C., D.S.M., of Boston, whose picture you've already seen in

the center of the first News page this month. Captain Forbes is a ranking officer in the Sons of the American Legion, and he wore the Club's Distinguished Service Medal on his uniform throughout his recent trip to France with the American Legion. On his return he said: "Many officers have expressed highest commendation concerning the F.A.C. medal. They said that it was the finest award they have ever seen. And the Legion itself gave me a Gold Palm for my interest in Legion affairs, placing it upon the ribbon of the F.A.C.'s D.S.M."

I would like to be able to print all of Bill's report about his trip, but space just won't permit it. So here's as much as we can squeeze in:

"Aviation plays a very important

part in the American Legion's program, and I am naturally interested anyway in all aviation movements. And I believe, by the way, that the Flying Aces Club has all other organizations of its kind stopped a mile!

"During the American Legion National Convention and two days before the Legionnaires sailed for France, Clint Randall personally pinned the D.S.M. on my uniform (because of a long record of excellent service—Clint) and commissioned me to represent the Flying Aces Club on the Legion's trip overseas. That was the proudest moment of my life!

"Overseas, I visited many places of interest, but those that appealed to

(Continued on page 92)

## The Airmail Pals

... ..

NEWS! I wonder how many readers of FLYING ACES Magazine have any idea as to where this fascinating word came from? Well, it's one of those words about which even the dictionary isn't a hundred percent positive, although there's a chance that news has the same source as the French word *Nouvelle*, which means "short story" and from which our own words "novel" and "novelette" developed.

However, there's a story among reporters that the name of the profession in which they make their living came originally from a printer's error. Some papers, it seems, used to print news under a standing head marked with the points of the compass—N, E, S, W. One day, though, a printer is said to have transposed the last two letters—and thus the word NEWS was born!

Take it as you wish. But if you readers could sit at my desk and read the thousands of pal letters we receive from all over the world, you'd find it quite easy to believe that the word *was* formed in this manner. For these letters bring the gossip of the globe, and their contents give me up-to-the-minute News of the whole world.

A new airport here . . . . a thrilling rescue flight there . . . . a freak accident somewhere else . . . . and a startling record made ten thousand miles away! Still another letter may tell about life in Maoriland or Timbuctoo!

Here, for instance, is a letter from Leonard Neal, a seventeen-year-old lad in Natal, South Africa. Says Len:

"During the holidays I go right up into the wild and woolly north country of Zululand. Here my uncle has a farm which swarms with snakes and buck, and even boasts a wildcat or two. The crocodiles in the river are nuisances, since they often 'get' the cattle as they come down to drink! Yep, and it's grand fun shooting up there. In fact, last time I was up, I killed a Rietbok ram!"

Whew! And we'd been thinking that such wild spots existed only in Frank Buck's pictures, nowadays.

Len makes an interesting comment, by the way, about certain pen pal letters he has received. Many of them are "very uninteresting," he says, with about all that's in 'em being: *Dear pal: I woke up, had grub, went to school, had lunch, went to school again, had grub again, then went to bed. Swell fun!* "And," Len continues to say,

"That seems to be their idea of life. It's a wonder they don't commit suicide—or sump'n!"

Well, fellows, I've seen thousands upon thousands of your letters, and not *all* of 'em are as bad as Leonard says. But once in awhile they are—so watch 'em, gang!

From England this month comes a letter written near that world famous airport, Croydon. Quent Blay, who wrote it, says:

"Sometimes I spend a whole day watching planes of all nationalities departing for such countries as Holland, Germany, Italy, France, and Egypt. We have a regular Dutch and German airline service passing right over our house!"

Yes! and the R.H.P.D. will take a sizable bet that before many more years seventeen-year-old Quent will be flying a huge transport himself. For aren't the pages of British history plumb full of the adventure of staunch British lads like Francis Drake, Walter Raleigh, Dick Grenville, and others of the kind, who spent their early days watching the big ships set sail? Good luck to you, Quentin Blay!

—THE RIGHT HONORABLE PAL DISTRIBUTOR

### HOW TO GET AN AIRMAIL PAL

FIRST, write a letter just as if you were writing to your new pal—the kind of letter which tells your age, particular interests in aviation, your hobbies, et cetera. (If you wish, you may include a separate sheet of paper telling us, in a general way, what kind of a pal you seek.) Next, send this letter to Airmail Pals, care FLYING ACES, 67 West 44th St., New York City. And be sure to enclose a stamped, self-addressed envelope.

Now, when your letter arrives, we select a Pal for you from our batch of letters—the sort of Airmail Pal your letter indicates you want—and we mail his letter to you in the stamped envelope you send us, and we mail your letter to him. Then you're all set! Of course, if you want additional Pals, just write us again.

#### REGARDING FOREIGN PEN PALS

IN case you do not reside in the United States, write a pen pal letter as above—but do not enclose a stamped, self-addressed envelope or send any money for stamps. Your pal letter will be forwarded to an American correspondent, following which you need only wait for his reply.

If you are an American who wants a foreign pal do not write a pen pal letter. Instead send us a short note telling in a general way what kind of a chap you are, and what kind of a foreign pal you seek. Enclose a self-addressed, stamped envelope. A foreign writer's letter will be sent to you, then you may begin writing him direct from your own home. Foreign airmail pals are cared for in this fashion because foreign stamps sent in from other countries cannot be used in the United States to forward letters to Canada or across the seas.

Those of you who seek foreign pals will be given American correspondents whenever the supply is exhausted. Please note also that we cannot supply you with foreign pals in non-English speaking countries where FLYING ACES is not distributed.



# JOIN THE FLYING ACES CLUB

## Honorary Members

President and Mrs. Franklin D. Roosevelt  
Vice Pres. John Nance Garner

Casey Jones	Rear-Admiral Byrd
Wallace Beery	Capt. Edward Rickenbacker
Al Williams	Colonel W. A. Bishop
Col. Searon	Major G. A. Vaughn, Jr.
Major von Schleich	Willy Coppens
Lieut.-Col. Pinard	Gerard Balbo
G. M. Bellamy	Wallis H. Beach
Capt. B. Sergievsky	Frankie Thomas
John K. Northrop	Dwase L. Wallace
Colonel Rexcoe Turner	Josef Veltjens
Charles W. A. Scott	Frank Hawks
Richard C. DuPont	Donald W. Douglas
Maj. A. W. Stevens	Capt. Edwin C. Musick
Capt. D. A. Anderson	Clarence D. Chamberlin
Major Fred Lind	Mrs. Charles S. Seylles
Lieut.-Col. Theodora Roosevelt	

## Official Charters

F.A.C. Flights and Squadrons are recognized at GHQ only after they have received their official charters. These illustrated documents, printed on fine paper and portraying various features in the field of aviation, are excellent for framing and display. Their inspirational text is in keeping with the high ideals and aims of our Club. Each charter application must include a full list of proposed group members and their addresses. Each of these members must hold his regular F.A.C. card, obtained by clipping and sending in the membership coupon printed on this page. If applications are approved, Flight Charters are issued for 25c, and Squadron Charters for 50c. Send the correct fee with your application. It will be returned if the Charter is not granted.

## WIN YOUR WINGS

Save This Whole Coupon for  
CADET OR PILOT  
insignia of the F.A.C.



All members with Official Membership Cards are eligible for Cadet Wings. This coupon, with two others and 10c, entitles members to Cadet Wings. Do not send this coupon alone. Save it until you have three. Then send them in all together with a self-addressed envelope and 10c to cover cost of wrapping and mailing (shipments overseas).



All enrolled members who have won their Cadet Wings are eligible for Pilot's Wings. This coupon, with four others and 10c, entitles Cadets to Pilot's Wings. Do not send this coupon alone. Save it until you have five. Then send them all together with a self-addressed envelope and 10c to cover cost of mailing.

### Send the Whole Coupon

regardless of which kind of wings you wish. Separate sets of coupons are needed for each insignia. The coupon begins where it says "Win Your Wings." Canadians send International Reply Coupon for 15c. British and other overseas readers send coin or coupon for one shilling. Only one pair of either kind of wings to a member. If yours are lost, send 25c for new ones (one shilling overseas). [88]

## Do Your Full Share to Advance Aviation

To advance the cause of aviation, over 50,000 men and women, boys and girls, have banded together to form the FLYING ACES CLUB.

It is the easiest club in the world to join. Just clip the membership coupon, fill out, and mail it to GHQ with a stamped, self-addressed envelope. Your official card will then be forwarded to you. After joining, you can quickly win promotion and the right to wear the various insignia of the Club.

In the FLYING ACES CLUB there are two kinds of local organizations, known respectively as Squadrons and Flights. A Squadron must have eighteen members, including its leader. A Flight must have a total of six. You can start either of these groups in your own community by enrolling your friends in the Club, then applying for an official charter as detailed in the column at the left. Each member must hold an F.A.C. card.

Meetings and activities are conducted among the squadrons and flights according to the wishes of the members. GHQ has established no rulings in this respect, nor are there any dues or red tape whatsoever. The entire idea of the Club is a common meeting ground in an international organization for the lovers of aviation in its various phases. Many local Squadrons and Flights hold regular contests and public events. Many hold weekly meetings for model building, and instruction, and even regular flight training.

## Awards and Escadrille

After the membership card, and Cadet and Pilot's wings, comes the Ace's Star. This is awarded for enrolling five new members, using, of course, a separate coupon for each. As an Ace, you are then eligible for membership in the FLYING ACES ESCADRILLE. Then you may win truly handsome awards. Among these are the Distinguished Service Medal and the Medal of Honor, two of the finest decorations the Club's professional artists have ever designed.

Any member who has reached the rank of Ace is eligible for membership in the FLYING ACES ESCADRILLE, an advanced organization which replaces the old G-2 unit and opens the way for participation in a definite program contributing to the forward movement of aviation.

To enroll, an Ace must apply direct to Escadrille Headquarters, giving his name, age, address, rank, and highest award already won in the Club, and enclosing a stamped, addressed return envelope. If he is approved for membership his instructions will be forwarded. Membership in the Escadrille is limited to American and Canadian members only, at present.

## Special NEW Service!

This Aviator's Positive Identification Bracelet



Registration and Bracelet Only 25c!

A valuable identification service for F.A.C. members is now offered with our World War type aviator's bracelet. Every one now issued will bear a serial number—which is the key to your confidential identification record on file at GHQ. In emergencies where prompt identification is needed, this number may be sent to GHQ, and identification facts will then be furnished. When ordering, send your name, address, occupation and full physical description—age, height, weight, color of eyes, hair and complexion, etc., together with name and address of nearest kin. Overseas readers may receive bracelets and be registered for 2/- in coins or Int. Money Order for same amount.

## Correspondence

In all correspondence with GHQ where a reply is desired, enclose a stamped, self-addressed return envelope with your letter. GHQ receives thousands of letters weekly, and cannot undertake to answer all of them unless this is complied with by all members who write.

## Keepers of the Log

In order to keep in touch with GHQ, every squadron should appoint a member with a facility for writing as Keeper of the Log. It shall be the duty of the Keeper of the Log to send in regular reports of interesting doings of his squadron. His is an important job, because it is only by means of interesting squadron reports that life can be given to the monthly Flying Aces Club News.

Photographs, too, are an important consideration for the Keeper of the Log. Either the Keeper himself, or any other member with a camera, should keep a photographic record of the squadron's activities, for reference purposes, to show prospective new members, and to allow a selection of pictures to be sent to GHQ for reproduction in the Club News pages in our magazine.

The cost of film, prints, etc., would be a legitimate charge against the squadron's own treasury or could be covered by members' contributions. A number of flights and squadrons, incidentally, send us prints which have been taken, and completely developed and printed by members.

## Stationery and Pennants

Due to popular request, we have ordered a new supply of F.A.C. stationery and official F.A.C. (paper) pennants. The stationery is of high quality with the Flying Aces Club letterhead attractively hand-lettered, and the price is amazingly low—100 sheets, postpaid for 25c. The attractive pennants (with gills on the back) sell at 6 for 10c or 20 for 35c.

We also have a new supply of swell silk embroidered insignia for cap and sweater. They're available at 85c per pair, or 25c for the sweater emblem and 15c for the smaller one.

## March Membership Application

I, the undersigned hereby make application for membership in the Flying Aces Club. I agree to live up to its rules and regulations, to foster the growth and development of aviation, and cooperate with all other members in the work of spreading aviation information, building up confidence in flying for national defense and transportation. I will aim to build up the Club and its membership, and do my best to win the honors that the Flying Aces Club offers.

My name is .....

Age ..... [38]

Street .....

City ..... State .....

Mail this application, enclosing a self-addressed, stamped envelope. Canadians send International Reply Coupon worth 5c. Overseas readers send a similar coupon worth shilling.

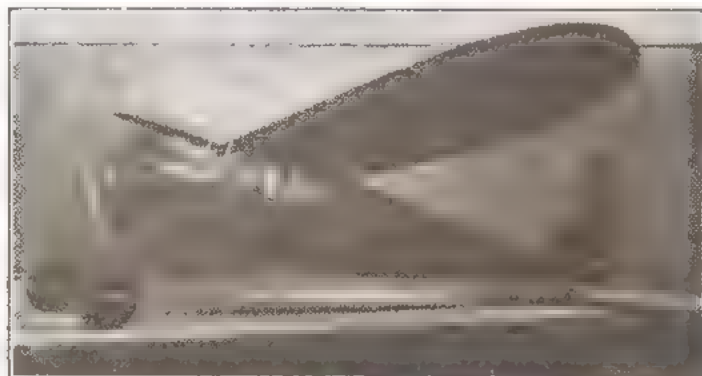
**FLYING ACES CLUB, 67 W. 44th St., New York**



# With the Model Builders



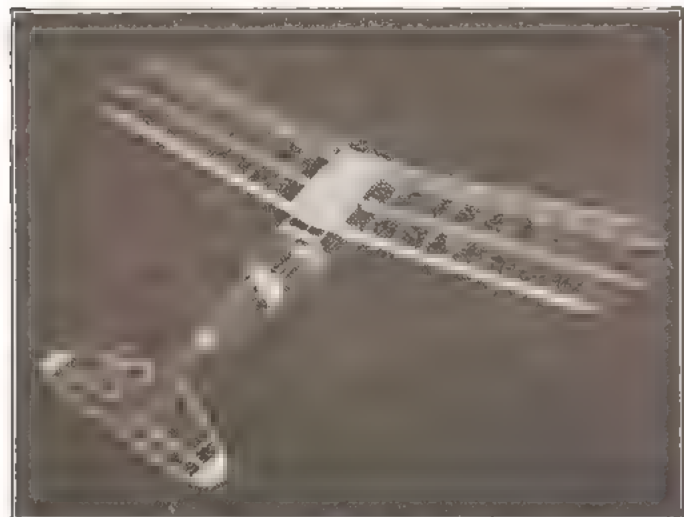
This is his model's most famous. And I think saying a gas job doesn't make you want to shoot some of that Christmas cash—if there's any of it left—on a gas motor, we miss our passes! Above, Petroler Bill Weaver, of Frederick, Md., shows you his California Chin. He's at work right now on a "Miss America."



From O. J. A. J., Herman Zwinger submitted this neat shot of his "Flying Quaker." Built by Herman and flown with excellent results, the ship certainly looks as if it has "what it takes."

## MODELERS!

Here's a Swell Display of Gas-Powered Jobs



Bill Randle, of Leicester, England, sends us this shot to show what a good gas job looks like before the covering is applied. The model is finished now, and Bill powers it with a Mighty Midget motor.



This "Number Thirteen" job comes all the way from San Diego, Calif., where it was built by Leighton "Spider" Webb, president of the San Diego "Aeronauts." Designed entirely by its builder, the ship has a span of forty-five inches and is powered with a Brat engine.



"My first gas-powered plane!" That's what J. Miller, of Huntington, W. Va., told us about this nifty Quaker Flash when he sent the picture. A pretty swell "first," we'd say. Young 'J' also installed a Mighty Midget motor.



Here's an unusual bit of flying stock! Planned and built by Joe Plute and John Sakaley, of Pueblo, Colo., her span is ninety-one inches and she's driven by a Brown Junior motor. And pipe that neat trick photography, fellman, Joe Plute, there, seems to have his fingers on the wing-tip. But actually he's several feet behind the ship and is merely holding out his hand!



# News of the Modelers

## Gas License Program Put Under Way

By N. A. A.

• • •

### GAS MODEL SITUATION

**J**OINT ACTION of the National Aeronautic Association and the International Gas Model Airplane Association has at last clarified the situation concerning gas model flyers and the operation of their models.

The N.A.A. and the I.G.M.A.A., according to information from N.A.A. headquarters at Washington, have merged to form a new N.A.A. Gas Model Division, offering a national and international program which will give to gas fans the opportunity to end forever the many criticisms that have been made in opposition to their activities.

Under the new set-up, the Gas Model Division will issue licenses to gas model flyers. Each licensee will be pledged to strict adherence to certain operating rules prescribed in the interests of safety. The rules are not new; they are merely the combination of measures that all sensible gas modelers have already followed toward the protection of themselves and others, and their models.

There will be limits to weight, engine run, and fuel. Engine run will not be over 40 seconds, fuel allowance will be not more than 1/16 oz. per pound of plane weight, and the weight of the entire plane will be restricted to a maximum of 7 pounds.

No modeler under 16 years of age will be granted a license, and no person holding a license may fly his models at airports where approval for such operation has not been given. Action against violators of gas model rules will result in the suspension or absolute withdrawal of licenses, which of course will disbar the offenders from official contests and officially approved flying grounds.

In addition to issuing licenses, the directors of the new organization will decide on rules for the annual National Gas Model Contest. They will also act to certify national and international gas model records.

The membership and license fee will be \$1.00 for the first year and \$1.00 for annual renewals. These fees will help to cover a portion of the cost of flying licenses, registration of models, lapel pins, and various other individual and club services. They

have been held as low as practical for the benefit of all builders, and cover only a portion of the total expenses incurred by the N.A.A. in carrying on this work.

Since the I.G.M.A.A. will merge directly into the N.A.A. each former member of this organization who became a member of the new Gas Model Division before January first will be issued a certificate attesting that he is a gas model "early bird." The certificate will further state that its owner is a pioneering member of the N.A.A.'s new division intended to foster greater support for and more confidence in gas model operation in all parts of the country.

Another point of interest is that records for gas models will now be recognized internationally as well as nationally, through representation of the Gas Model Division on the newly-formed Model Aircraft Commission of the Federation Aeronautique Internationale.

### IMAC ACTIVITIES

**M**EMBERS of the Illinois Model Aero Club, of 430 South Michigan Ave., Chicago, are now grooming their models for a series of indoor contests. The club flies every Saturday at the 132nd Regiment's Armory, and regular meetings are held on the first and third Friday of every month.

Radio control of gas models was the chief topic of a recent meeting,

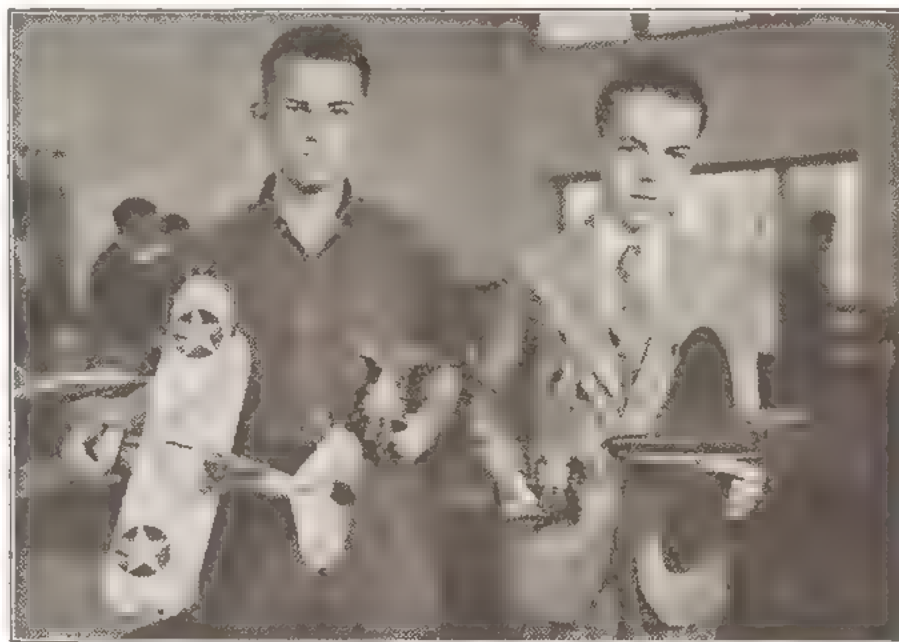
with an experienced radio "ham" on hand to help out on technical points.

### PHILADELPHIA PUBLICITY

**C**ITY NEWSPAPERS in Philadelphia have been most helpful in furthering the work of the Quaker City Gas Model Airplane Club during recent months. Hardly a week goes by without some leading paper running at least one feature article on the Club, and the *Philadelphia Record* ran an entire series of friendly stories prior to the Club's recent Eastern States meet.

Since the meet, the *Philadelphia Inquirer* on one occasion printed almost a whole page of swell action pictures in its excellent rotogravure section, and as a result memberships in the Club have increased in num-

(Continued on page 90)



Top: Here's Charles Boon of Philadelphia's Quaker City Gas Model Airplane Club, grooming his "Miss Philadelphia." The ship responded to Charley's care by netting him the major trophy in a recent meet at Mercer Airport, Trenton. And the heavily-laden lads in the lower picture are Bill Fox (right) and Don Wiebe, who took first and second prizes, respectively, in the rubber-powered division of the First Annual Model Airplane Contest of the Aero Industries Technical Institute at Los Angeles.



That apparent mix-up in the "A" of "Army" is due to the black, streamlined tire on the left wheel of the retractable landing gear.



## AMERICA'S MOST POTENT PURSUIT!

Fastest of them all! That's what Army pilots are saying about the Seversky P-35 from which Gene Gailmard patterned this feature flying model. The big ship has a reputed speed of 350 m.p.h.—and that's "real going" for a fighting two-seater! Young Gailmard carefully followed the manufacturer's own plans in building the model for this article, so you'll be making a miniature "mock-up" of the big ship when you take our tip and—

# Try a Seversky P-35

By Gene Gailmard

**O**NE of the chief reasons for the present popularity of the Seversky P-35 among model makers is the recent publicity concerning the purchase by the Army of seventy-seven of these trim little two-place fighters. Spare parts to equal eight additional ships were also included in the original order.

The ships and parts are all headed for the squadrons of the Army's "Conquer or Die" outfit—the 1st Pursuit Group, at Selfridge Field, Mich. The Indianhead insignia that appears on our model is patterned after that of the 94th Pursuit Squadron, a component part of this Group.

While no Army figures have been released, the Seversky P-35 is perhaps the fastest and most up-to-date pursuit plane in the world today. It is said to have a top speed of from 300 to 350 m.p.h., a cruising range of 1,500 miles, and a landing speed of 70 m.p.h. with flaps.

The ship is a low-wing monoplane of all-metal construction, with such distinguishing features as a sliding cockpit hatch, streamlined tires, retractable landing gear (on which an emergency landing might be made even while the wheels are up), cooling flaps, Hamilton-Standard controllable pitch prop, and last—but far from least—a Pratt and Whitney 1,000 h.p. Twin Wasp 14-cylinder radial engine.

In our model, we have tried to follow the scale of the real ship as closely as possible, retaining at the same time the admirable flying qualities of the big ship. Thus

when you have built a ship in accordance with the accompanying plans, you should have a model possessing beauty, accuracy in detail, durability, and pleasing performance.

### FUSELAGE

**T**O MAKE this model, first determine what materials or equipment will be needed, then set them up and have them available for use as the work progresses.

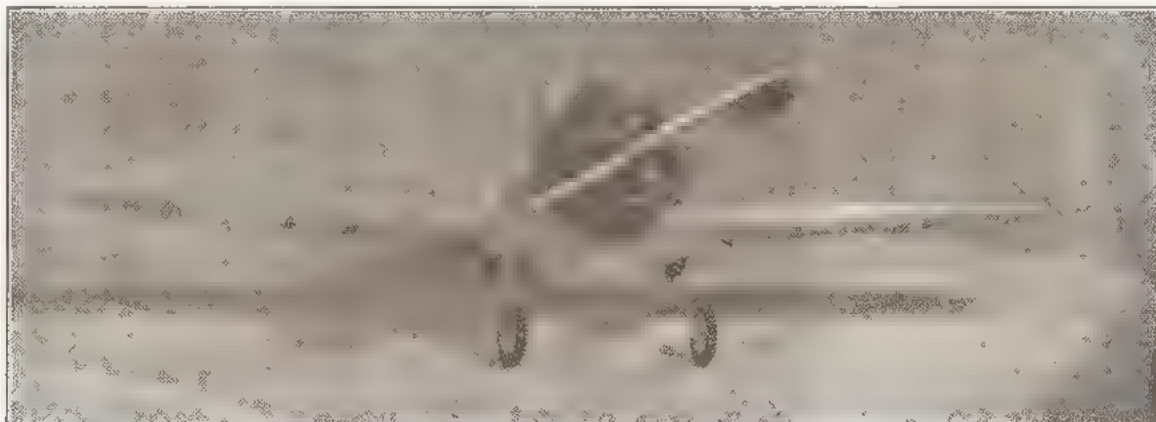
If you have a drawing board handy, this will be fine to work on. If you haven't, an old card table or similar table space will answer the purpose.

First, cut out your plans and tack them down. You will need 1/16" sq. for stringers, 1/32" sheet, and a small piece of 1/16" sheet for the fuselage. When these are laid out you are ready to start.

To begin with, see that the two sheets containing the side view of the fuselage (Plates 1 and 2) are laid out together. Cover them with wax paper. An examination of the plans will show that a box-like structure runs through the center of the fuselage. To make this, pin 1/16" sq. balsa to the plans, cut to fit, and glue together to form one side of the box. When this is dry and removed from the plans, make another.

From the top view, the width of the box may be obtained. Cut the braces in this view to size, then glue them between the sides and on top and bottom. The two sides are joined at the tail.

Put the box aside now, and from 1/32" sheet cut the



In the real P-35, that cowling would be encircling a gas-satin P & W Twin Wasp radial of 1,000 h.p. In the model shown here, though, the engine's a dummy built-up from scrap, and the actual power-plant is a 10-strand "motor" of 1/4" flat brown rubber. You'll find this picture mighty helpful, by the way, when you make your own model of the P-35.



formers shown on Plate 3. For the present, cut out only the notches outlined in solid black. Formers 1N and 2N are of 1/16" sheet. When all are cut out they may be glued in place on the box by referring to the top and side views. When the formers have dried thoroughly, 1/16" sq. stringers may be run through the notches which you have prepared.

Starting at the rear former, you may now cut the other notches one at a time, and glue the stringers in notch by notch as you go along. This method will give you stringers that are perfectly straight. You will also find that by using small scissors instead of a razor blade to cut the notches, the job can be done much more simply and accurately. When all the stringers are in place and have thoroughly dried, they should be lightly sandpapered.

Music wire is now bent over the cockpit spaces, the ends sunk into the balsa, and glued, to form the windshield frames, the solid balsa tailpiece may be shaped and sanded and the rear hook put in place (Plate 2). Be sure that the wire is thoroughly coated with glue where it enters the wood. The tailpiece and hook is now glued in place.

By studying Plate 1 you will see that there is a solid balsa block under the leading edge of the wing. This is carved from soft balsa and cemented in place.

#### COWLING AND MOTOR

**D**RAW with a compass seven circles of the sizes shown in shaded sections on the side view of the cowlings (Plate 1). Use 1/4" sheet balsa. Cut them out carefully with a razor blade. It is now necessary to remove the inside from five (the smaller five) of these.

One way to do this is to burn them out with a very hot curling or soldering iron, but if this method is tried, be very careful not to burn yourself or to set fire to the balsa. The inside may be cut out if desired, but this sometimes splits the wood. Do not worry about getting the inside circles perfectly even, for they will not show a great deal when the motor is finally in place.

When the seven circles are ready, glue them together in their proper order and allow them to dry. When dry, sandpaper until all irregularities have been removed. A hole 1/4" in diameter is now bored through the center of the last two circles. The cowling may then be set aside and work on the motor started.

Fourteen cylinders are built up from scraps and bound with black thread (Plate 2). They are mounted on two seven-sided blocks (which also have 1/4" holes bored through them) in such a manner that the rear cylinders show through between the front ones. The inside of the cowling and the motor itself are then painted black. The motor is then glued in place.

#### WING AND TAIL

**C**UT all ribs from 1/16" sheet, and make two of each (Plate 3). The leading edge is made in two pieces, and is carved from soft balsa to the shapes shown in the cross-sections at the front of each rib. Cut the trailing edges from 1/16"-thick sheet balsa.

Each wing tip is made of three pieces cut so that the grain follows the curve of the wing. Notches are cut in the rear edges of the ribs to receive the trailing edge.

To assemble the wing, first glue the ribs to the leading edge as indicated. The trailing edge is glued flush in the notches provided. The spars are now added, the ribs being notched in the same manner as the fuselage bulkheads for the stringers. Add the wing tip pieces. Glue the two No. 1 ribs firmly together, and a complete wing frame is the result.

The fin and rudder and the stabilizer and elevators are so much alike that one description will be sufficient for both assemblies.

Cut out the needed ribs in one piece, first getting the respective lengths and then cutting the curves in proportion. The typical tail section illustrated on Plate 3 will be helpful in this. The sections may now be divided where they are to be hinged.

The trailing edges are made in three pieces from 1/32" sheet. The leading edge is a strip 1/16" by 1/36"; if this is not obtainable in your vicinity, 1/16" sq. will do as well. The two spars



Viewed from "topside"—as a character in the story—your finished model of the Seversky should look like this. Notice the smooth appearance of the whole assembly. Your ship, too, will be just as sleek—if you use normal care in constructing it.

## CONSTRUCTION PLANS

for our swell flying model of the Seversky P-35 will be found on the three following pages.

on the hinge line are 1/16"sq. When dry, the tail units are hinged with sheet aluminum. The fin has two 1/16" sq. balsa braces. And now we'll go up front again—:

#### LANDING GEAR AND PROP

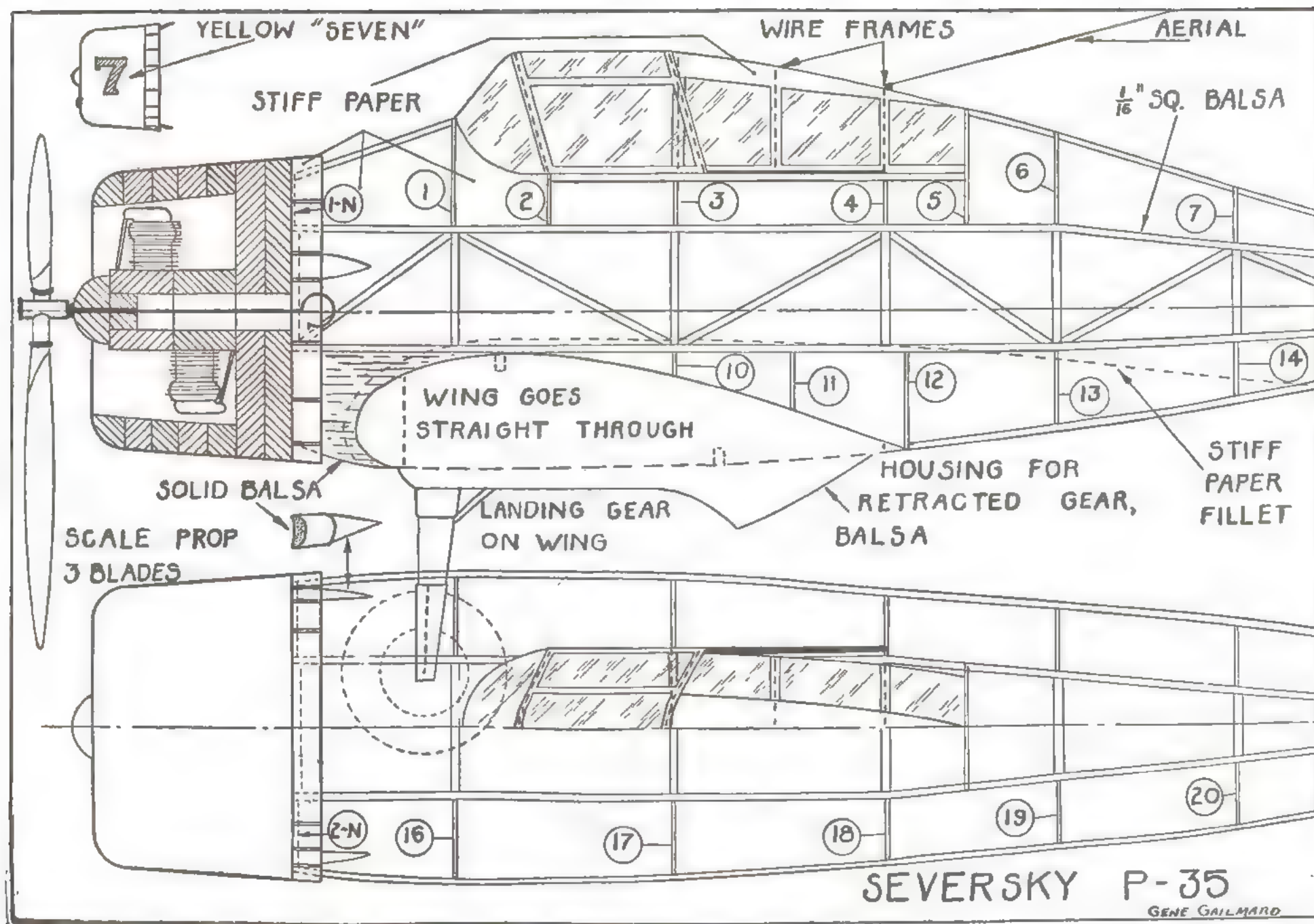
**M**OUNT the landing gear on the front of large fairings beneath the wings. These fairings (Plate 2) are shaped from solid balsa, and painted yellow, with a black stripe on the underside representing the retracting cavity for the wheel. Make the landing gear struts of two streamlined pieces glued together.

A small piece of aluminum extends downward from (Continued on page 94)

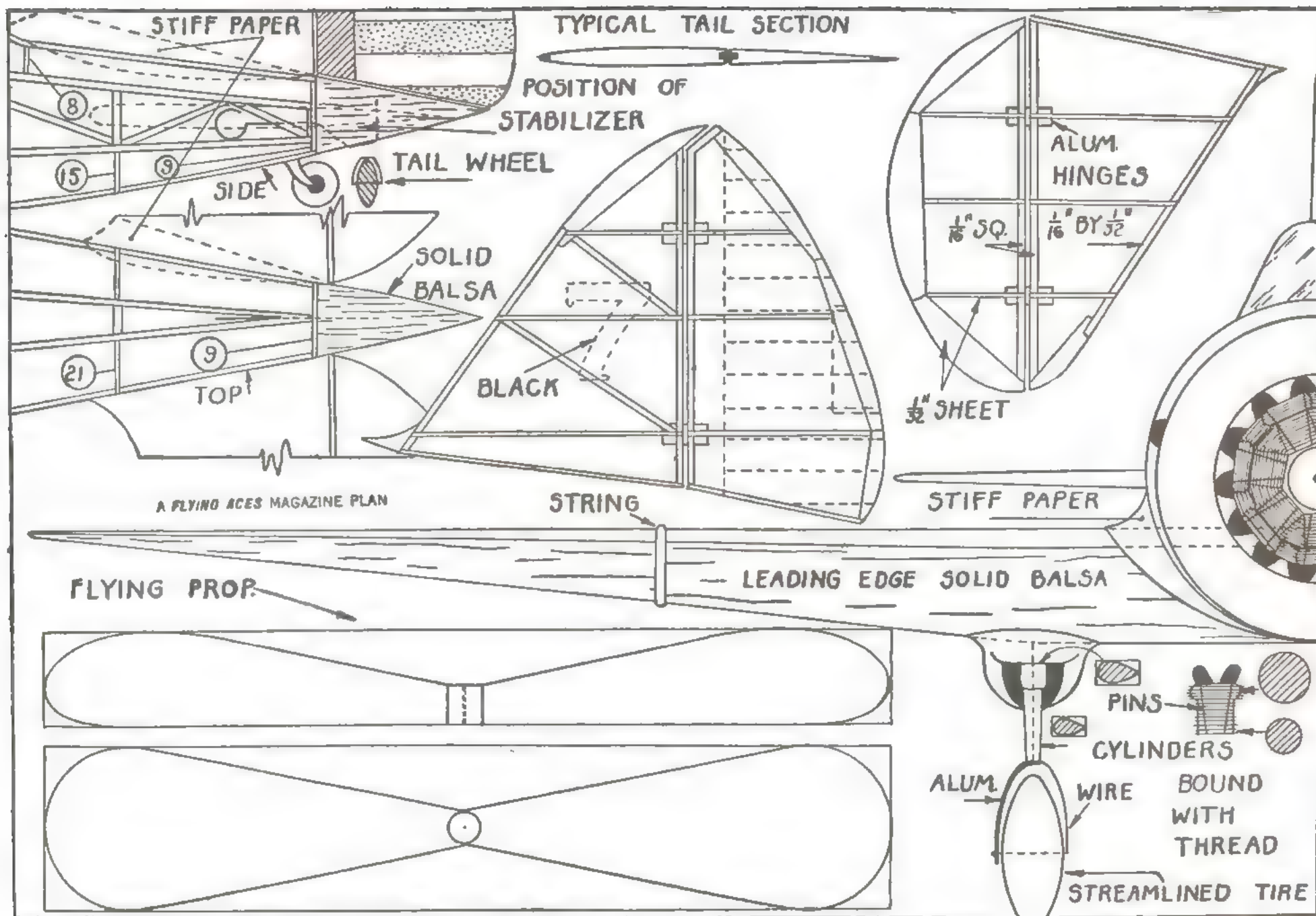


Big ship—or model? Well, even the editors might have been fooled if this shot hadn't accompanied the model article on these pages. Actually, the ship shown here is the twenty-inch span balsa-and-tissue job that Gene Gailward tells you how to duplicate. And as far as its outward appearance goes, the model is complete even to the Indian head emblem and the radio aerial.



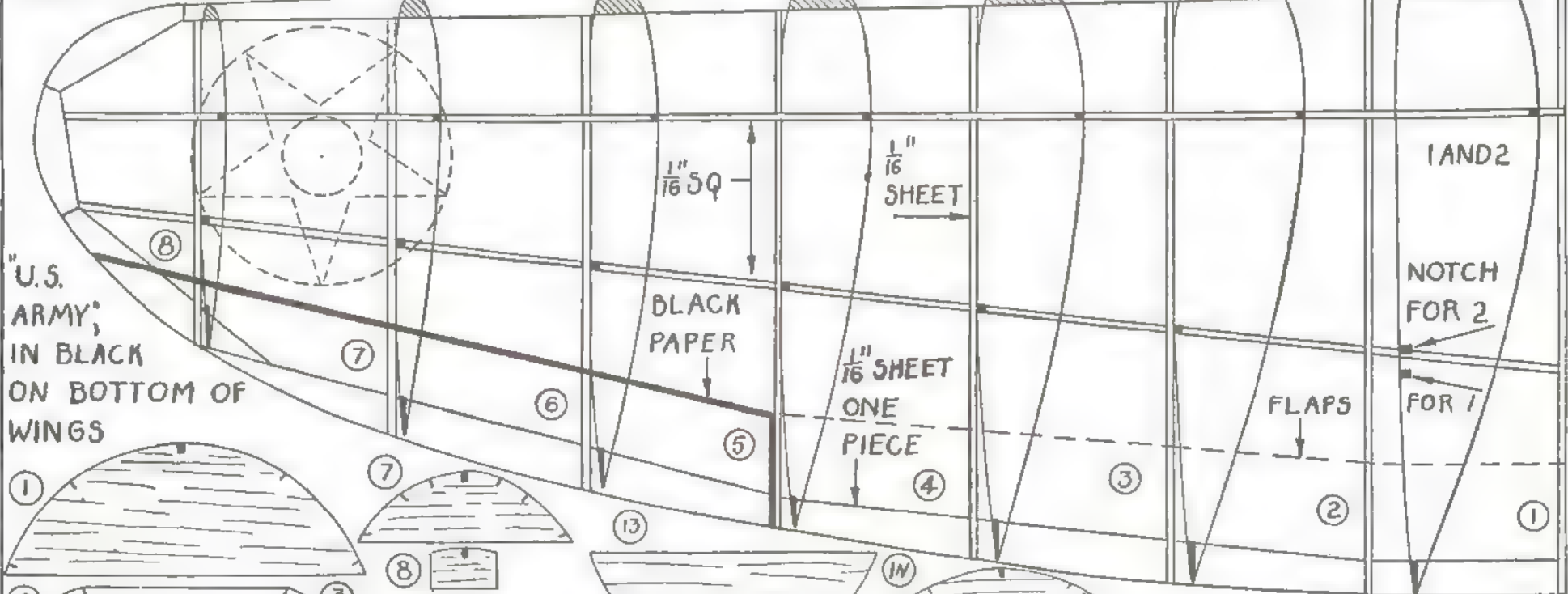




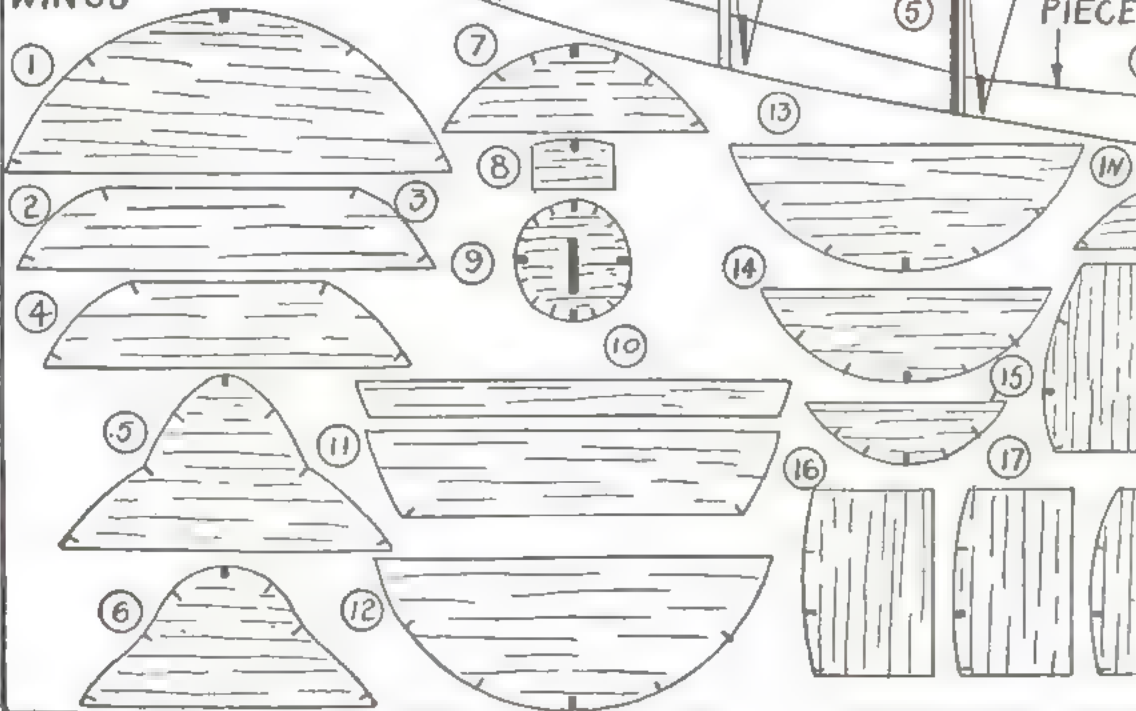




WING MADE IN TWO PIECES, AND JOINED AT "1"  
MAKE 2 OF EACH RIB



"U.S. ARMY;"  
IN BLACK  
ON BOTTOM OF  
WINGS



FORMERS

SCALE PROP.

ALL FORMERS BUT 1 AND 2N  
ARE  $\frac{1}{32}$ " SHEET. STRINGERS  
20  $\frac{1}{16}$ " SQ.

A FLYING ACES MAGAZINE PLAN



Shortly after this shot was snapped, the "Current Catcher" made friends with a travel-bent Texas thermal. And she hasn't been heard from since!



## A SURE-FIRE "R. O. G." STICK!

Hardly conventional—but none the less efficient—is the design of this five-minute flyer from the Southwest. Employing a built-up stick for strength and an unbalanced wing to counteract torque, the model embodies the best features developed by these crack Texan designers during the past several years. You'll like this little ship—and the authors have written the instructions so simply that even the most inexpert amateur can follow them.

# Our "Current Catcher"

By Mart Howard & Chuck Adams

**B**ECAUSE of its strong but light construction, its special airfoil and its efficient design, this *Current Catcher* stick model is truly ideal for "cloud flying." This small ship is easily made—and it's inexpensive, too!

If you build it carefully and fly it only when the weather conditions are most conducive to thermals, you'll almost certainly get sunburned tonsils from watching its startling climb. The original model has made flights of well over ten minutes, and the general average has been over five!

Before starting to make the model, study the plans carefully. Be sure that you understand just how to construct each separate part. And then get all your materials together ready for work.

The motor-stick, leading edges, and trailing edges of the model are all made of hard balsa. All other balsa parts are of medium grade. And now we've told you this much, you should be itching to get started. First comes the construction of the—

### MOTOR STICK

**A** MARVEL of lightness and strength, the motor stick is made of hard balsa. Cut two strips of balsa  $1/32"$  by  $1/4"$  by  $20"$ . On them, mark lines at every inch as stations for the inner bulkheads, which are  $1/16"$  by  $1/4"$  by  $1/4"$ . Lay one strip flat, and glue the bulkheads upright on it at each mark. Cut the end bulkheads, which are  $1/4"$  by  $1/4"$  by  $1"$ , and glue them in place. Now glue the other strip of balsa on the ends of the bulkheads, opposite the first strip.

Cut two other strips  $1/32"$  by  $5/16"$  by  $20"$ , and glue them to the sides of the bulkheads, thus making a boxed, built-up stick. Round off the ends of the stick to the proper shape and sand them well.

Cover the stick with two coats of superfine tissue, applying plenty of clear dope or banana liquid. The wire fittings are now cemented in place, and, by the way, remember to wrap the thrust bearing with thread. The motor stick can be bent around

the stick, not inserted into it. Bend the landing gear of No. 14 wire, and cement it to the body— $2\frac{3}{4}$  inches from the nose.

### WING AND TAIL

**S**INCE the plans are scaled down, you must make a full sized drawing of the wing according to the dimensions given. You will observe that the left half of the wing is slightly longer than the right half. I have found this a novel way to counteract torque and to help the model circle while gliding, without causing extra resistance.

Lay your enlarged plan on a soft board, and put a sheet of wax paper over it to prevent cement from spoiling it. Cut your leading edge to size— $1/4"$  by  $1/8"$  thick at the center, tapering to  $3/16"$  by  $3/32"$  at the tips. Now round it off as shown in the plans, using a sharp knife or razor blade and smooth sandpaper. The trailing edge is  $3/8"$  by  $1/8"$  at the center and  $3/16"$  by  $3/32"$  at the tips, cut to a triangular cross section (see wing rib on Plate 1.)

Cut an accurate metal, hard balsa, or cardboard template of the rib section, then use it to shape out twenty ribs from  $1/32"$  thick balsa. Notice that the wing is tapered, and that the ribs are cut to the proper length and sanded *after* the wing has been cemented—one-third of the excess stock is cut from the front of the rib and two-thirds is cut from the rear. This makes the construction of the wing a much simpler job than usual.

The tips are made of  $1/32"$  bamboo. The most efficient method of bending bamboo seems to be the template method. Cut out a cardboard or balsa template of the tip curve. Obtain a piece of bamboo  $1/16"$  by  $1/32"$  thick, heat it well over a flame, and carefully bend it around the edge of the template. After it has cooled it should be split in half, making two tips of the proper size. These are cut to fit, then cemented in place.

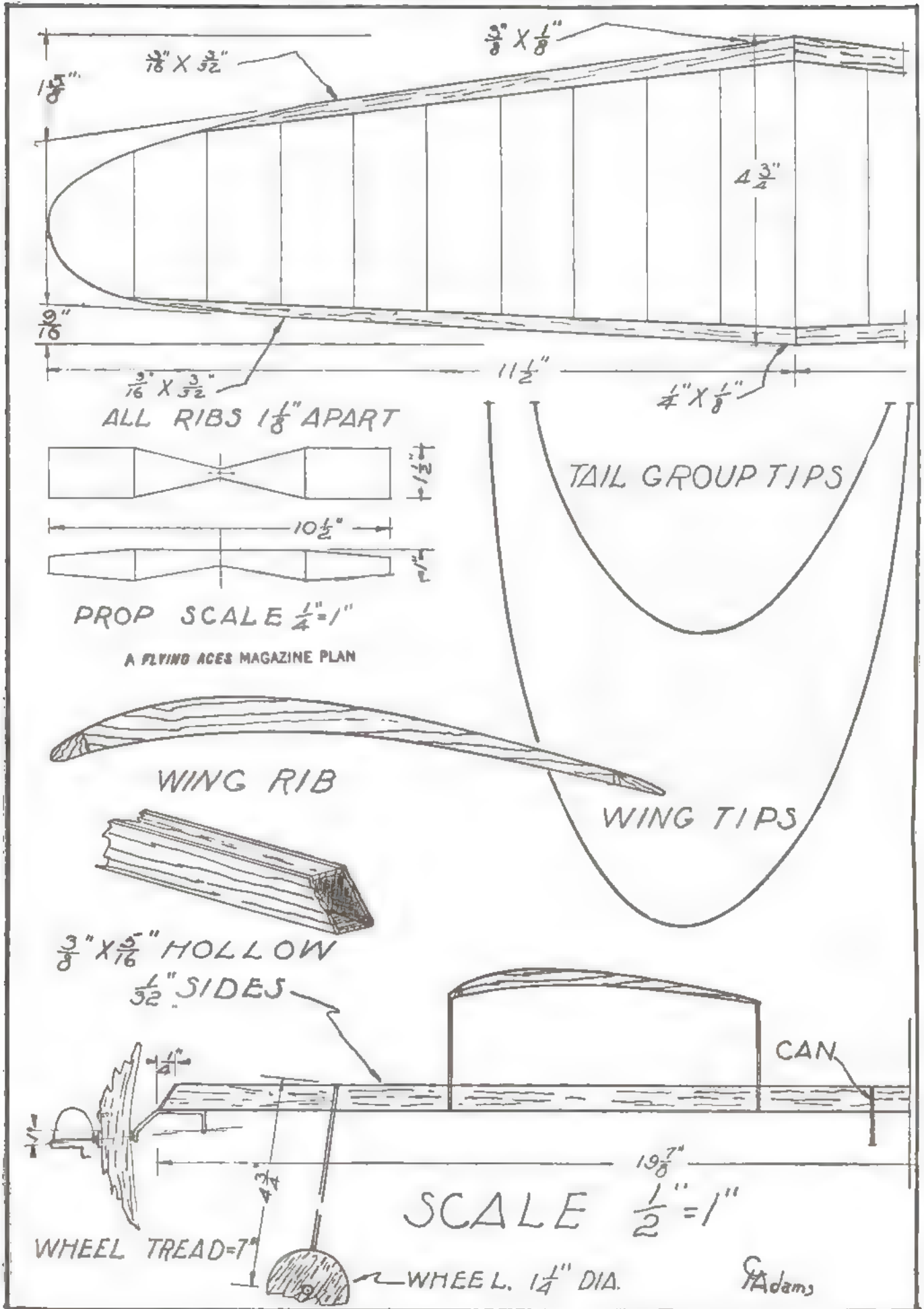
Next, lay the left side of the wing flat on your workboard, and raise the right side five inches. Cover the wing with superfine tissue. After covering, spray it with water and place it in the sun to dry. Be sure to spray one side and pin  
(Continued on page 95)



Ten feet of rubber comprises the six-strand motor that drives this "Current Catcher" cloudward. And to keep the prop-torque from dragging too heavily, the left wing of the model is made slightly longer than the right.

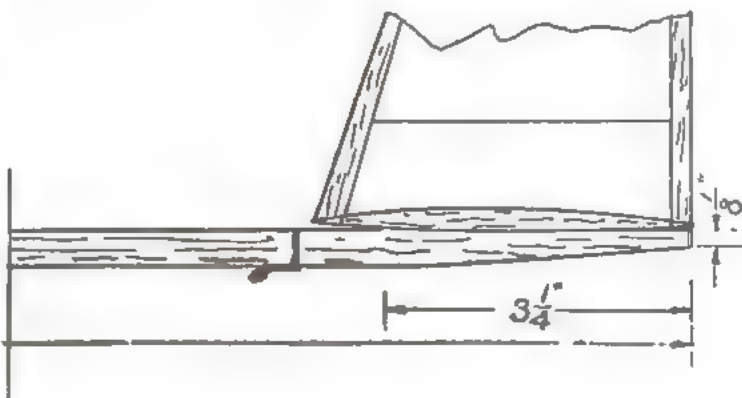
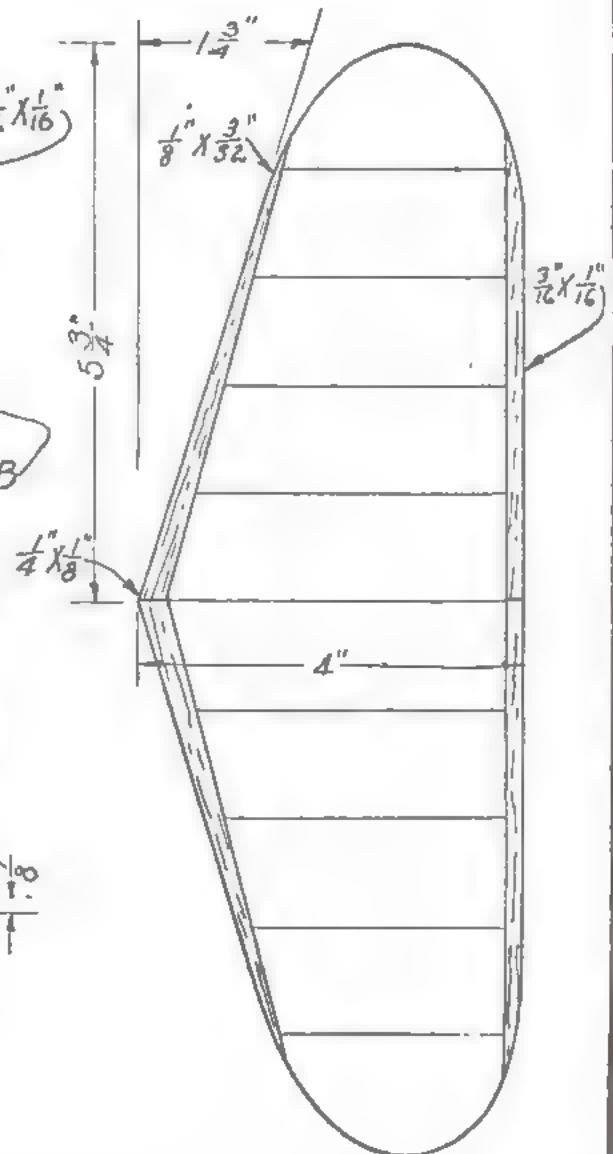
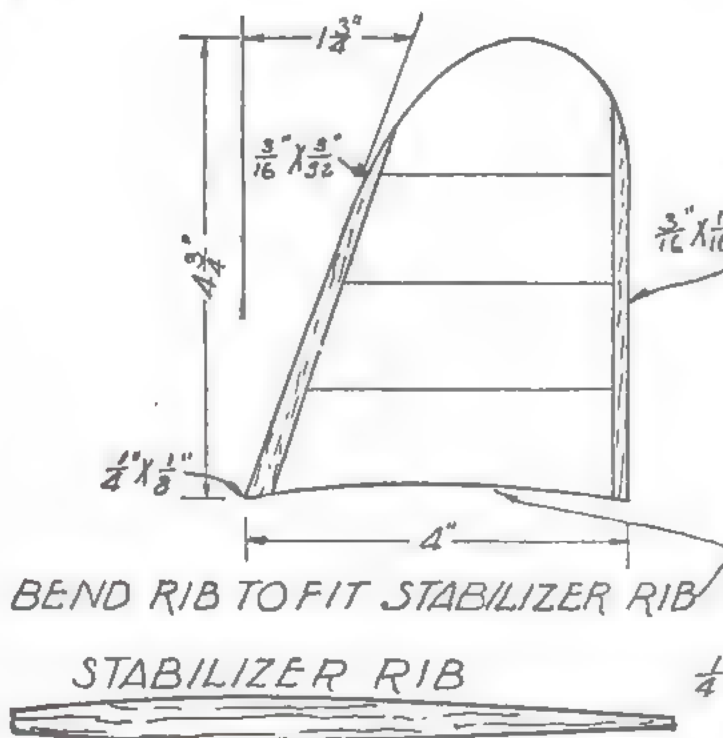
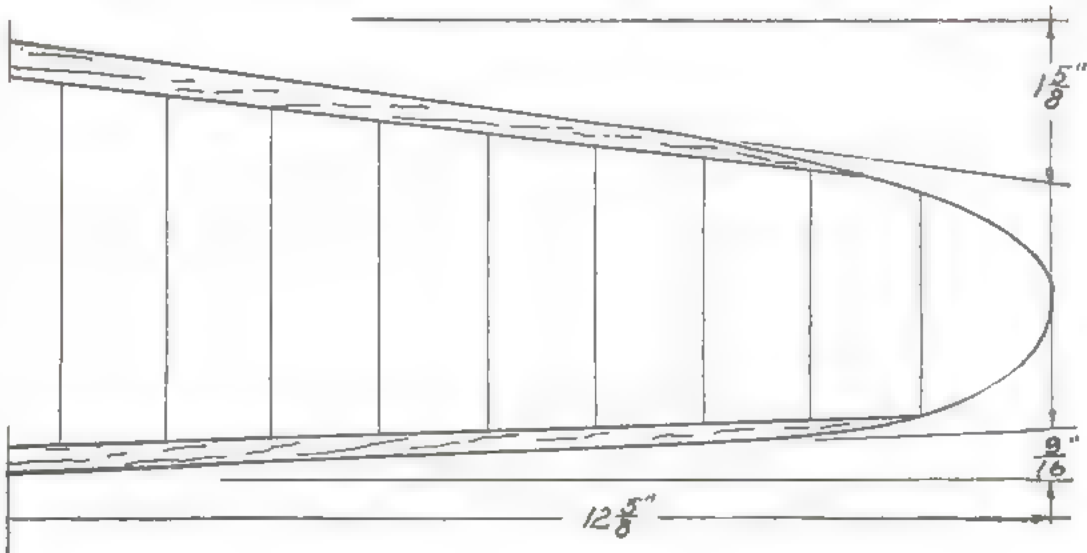


**OUR "CURRENT CATCHER"—Plate 1**





OUR "CURRENT CATCHER"—Plate 2



A FLYING ACES MAGAZINE PLAN

G. Adams



# The "Atlantic Clipper"

Within a few months, Pan American Airways will have its "Atlantic Clipper" ships flying regular routes between the United States and England. The six big four-motored giants intended for this service are now under construction in the huge Boeing shops at Seattle. You solid fans will thoroughly enjoy reproducing the external details of these new flying boats, and you can do it easily by paying careful attention to these plans and instructions while you work.

\*\*\*

By Nick Limber

**N**OW that aviation has definitely triumphed over the broad and hazardous Pacific Ocean to establish air routes all the way from America to Cathay, transportation experts have been turning their attention toward defeating Old Man Atlantic in a similar manner.

Preliminary survey flights have been made and their charted results carefully studied, and the experts have decided that this across-the-herring-pond hop offers a definite possibility for scheduled air flights. So regular trans-Atlantic passenger flights will soon be an established fact.

Pioneers in the England-America investigations were, as you undoubtedly know, Pan American Airways (U.S.) and Imperial Airways (England). Pan American's survey flights were made and their field data gathered by the special Sikorsky S-42B and its crew. But the proposed scheduled service will be inaugurated with a fleet of six four-motored giant Boeings, now under construction in the big Boeing shops at Seattle, Washington.

The new ships will be known as the Boeing 314's. Powered by four 1,500 h.p. twin-row Wright Cyclone engines, each ship will have an average flight range of 5,000 miles. With a weight of 86,000 pounds apiece, they will be the largest aircraft ever built by an American manufacturer. They will cost about \$1,000,000 each.

Seventy-two passengers will be carried, and each ship will have a crew of eight. There will be two decks. Special companionways are to be placed in the wings to allow engine inspection and repair during flight.

Decorations and other appurtenances in the 314's will be of ultra-modern design. And why shouldn't they be? For the passengers will pay approximately \$500 for their one-way tickets.

No announcement has been made as yet concerning the probable date of starting the service, but it is expected that regularly scheduled *Atlantic Clipper* ship travel will begin early in 1938.

Although but little detailed information concerning the 314's has so far been released, a good idea of their general layout can be gained by a glance at the accompanying diagram. Interestingly enough, the respective positions of passengers and cargo are just the reverse

of what they are aboard a regular surface liner, for in the 314's the cargo occupies space above that of the passengers, while on the steamships the cargo is stowed below.

And now we'll turn our attention to—

## BUILDING THE MODEL

**B**Y referring constantly to the photographs and drawings that accompany this article, you should have no difficulty in making a mighty fine model of this modern trail blazer of the air.

The fuselage, of course, is the first part of the task. Trace the side view of the ship from Plate 2 onto a balsa block measuring 9" by 1 1/8" by 1 3/4". Cut away the excess balsa and sandpaper the surface. Then trace the top view and follow the same procedure.

Refer again to Plate 2 for the cross-sections at various points on the hull. To trim the block to these shapes, you only need a sharp knife and sandpaper. Finish the shaping with very smooth sandpaper.

Now comes the tail assembly. The rudder of the ship is carved from 3/16" sheet balsa and the stabilizer from 1/8" sheet.

Trace the outlines from the diagrams. After cutting away all excess balsa, use sandpaper to work out the final streamline shape.

Cement the tail to the hull, making certain that the rudder is perfectly vertical and the stabilizer perfectly horizontal.

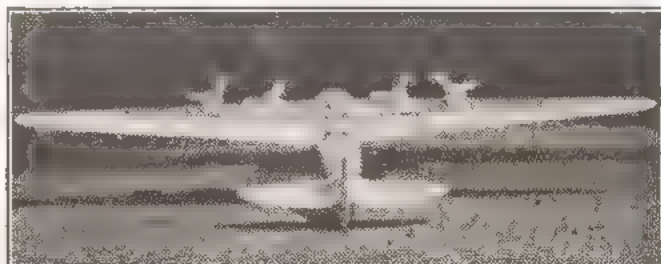
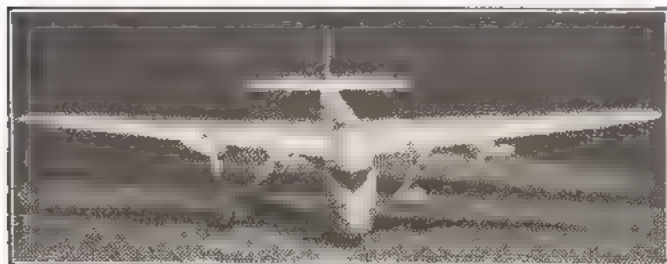
## WINGS AND NACELLES

**T**HE WING of the model Boeing 314 is made in two pieces. These halves are cemented into the hull. A slight dihedral angle is allowed.

Each half of the wing is carved from a balsa block 6 3/4" by 2 3/4" by 1/2". After tracing and shaping the wing to the indicated cross-sections, carve out the engine nacelles. These are made from a strip of balsa 9/16" square.

When they are completed, cement them to the wing halves. Attach the wing roots to the hull. Make sure that the dihedral is the same on each half, and allow plenty of cement. Don't try to shorten the time required for drying.

Carve the navigators' enclosure and the lower wing



Left: A whale of a ship! And you must admit that this front-view shot of Limber's model "Atlantic Clipper" looks quite a lot like a whale. Right: An excellent view of the ship from the rear. You'll find these two shots of great value if you keep 'em handy while building your model.



## SIX BOEING 314's TO START A TRANS-ATLANTIC FLEET

from  $\frac{1}{4}$ " sheet balsa. Cement them securely into their respective places.

When the actual job of shaping and cementing the model has been done, lay it all aside and allow plenty of time to dry. Then we're ready for the paint.

## COLORING THE MODEL

**S**ILVER is the chief color of the Boeing 314. The trimmings are of black and red. The entire bottom of the hull is red, and red is also the color of the decorative panel on the main wing. The wing colors are separated by a carefully drawn black line.

Black is also used on the portion of the nose immediately in front of the pilots' windows.

The number of coats to be applied to the model will depend entirely upon the type of paint and the grade of balsa from which the model is made. Sandpaper carefully between coats. While the final one is drying, cut from black paper the shields in front of the engine nacelles, also the windows.

Put these in position with cement and then cover the whole ship with a coat of clear lacquer. Set aside to dry.

Now install the four metal props by putting a pin through them into the nacelles. These small props are much better bought, incidentally, than made at home. Draw the P.A.A. emblem on the nose and the Boeing trademark on the fixed fin, as shown in Plate 1. India ink is a good medium for this task.

Indicate the position aural with common thread, running from a position just behind the rear of the inner motors to the leading edge of the stabilizer. Clipped pins may be used to hold the thread in place.

You may now add such realistic detail as you wish, indicating all movable control surfaces with a thinly drawn India ink line. Rule these lines carefully, using a straight-edged guide and a regular ruling pen if possible. And don't forget that ailerons and flaps should also be outlined on the lower surfaces of the wing. Hatches and doors are also outlined in ink.



And here's a side-view of the Boeing 244 "seal." Note the graceful taper of the airfoil and the attractive outline of the fuselage. That decorative panel on the wing is colored red to contrast with the silver hue of the ship.

For most builders the model is now complete. But for others—well, they are just getting started. For these are the chaps who wish to display their model to its best advantage—who are somewhat like the artist who knows that an appropriate frame will emphasize the good points of his painting.

So the chap who wants to emphasize the beauty of his model will want to build an

appropriate display stand for it. But since each builder is faced with a different problem in this respect, it is difficult for me to do more than suggest.

Homes differ. So does the amount of available space. Some builders prefer to make a small wire stand with

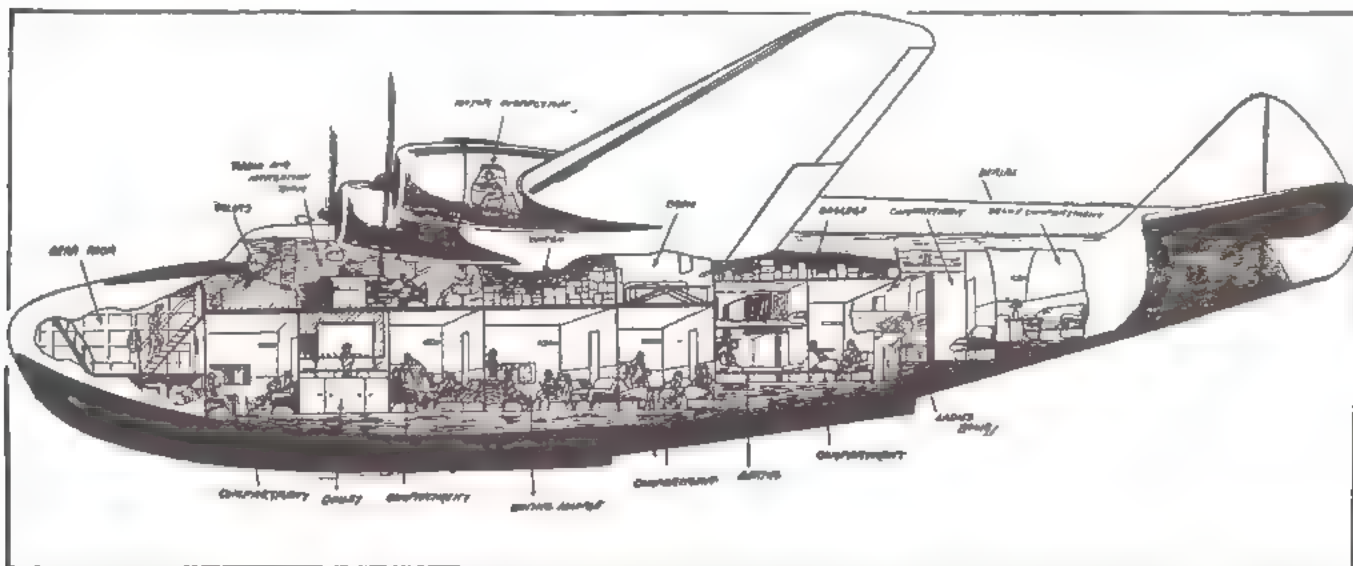
## CONSTRUCTION PLANS

for our swell solid model of this Boeing "Atlantic Clipper" ship will be found on the following two pages.

a base that will match a small table or the family radio. Others may prefer the glass case type, and still other modelers may like a shield-mount for the wall.

Thus your best bet is to take into consideration the final location of your model, and this should be sufficient guide in deciding upon the kind of display equipment you will use. And I'm sure that the editors of **FLYING ACES** will be pleased to publish good pictures of the job when it is finished.

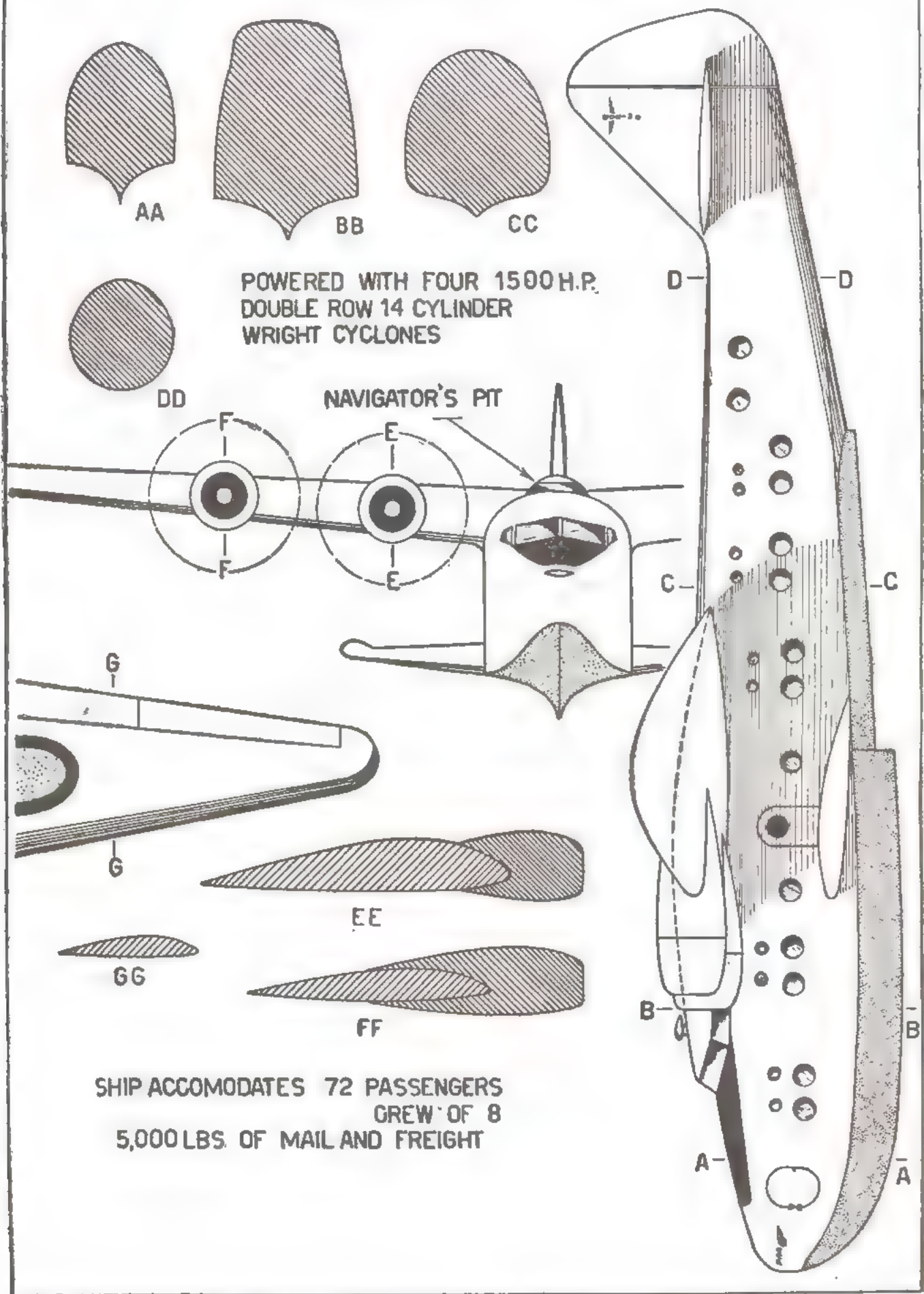
The expert modeler might attempt a built-up sectional model, using the drawing below as a general guide. The partitions and furniture, etc., could be constructed from scrap balsa bits, the figures from plasticine, the freight and baggage from tiny blocks of balsa or pine and colored for variety, and the upholstery and other fabric items from small pieces of silk or jap tissue. Try it—and good luck!



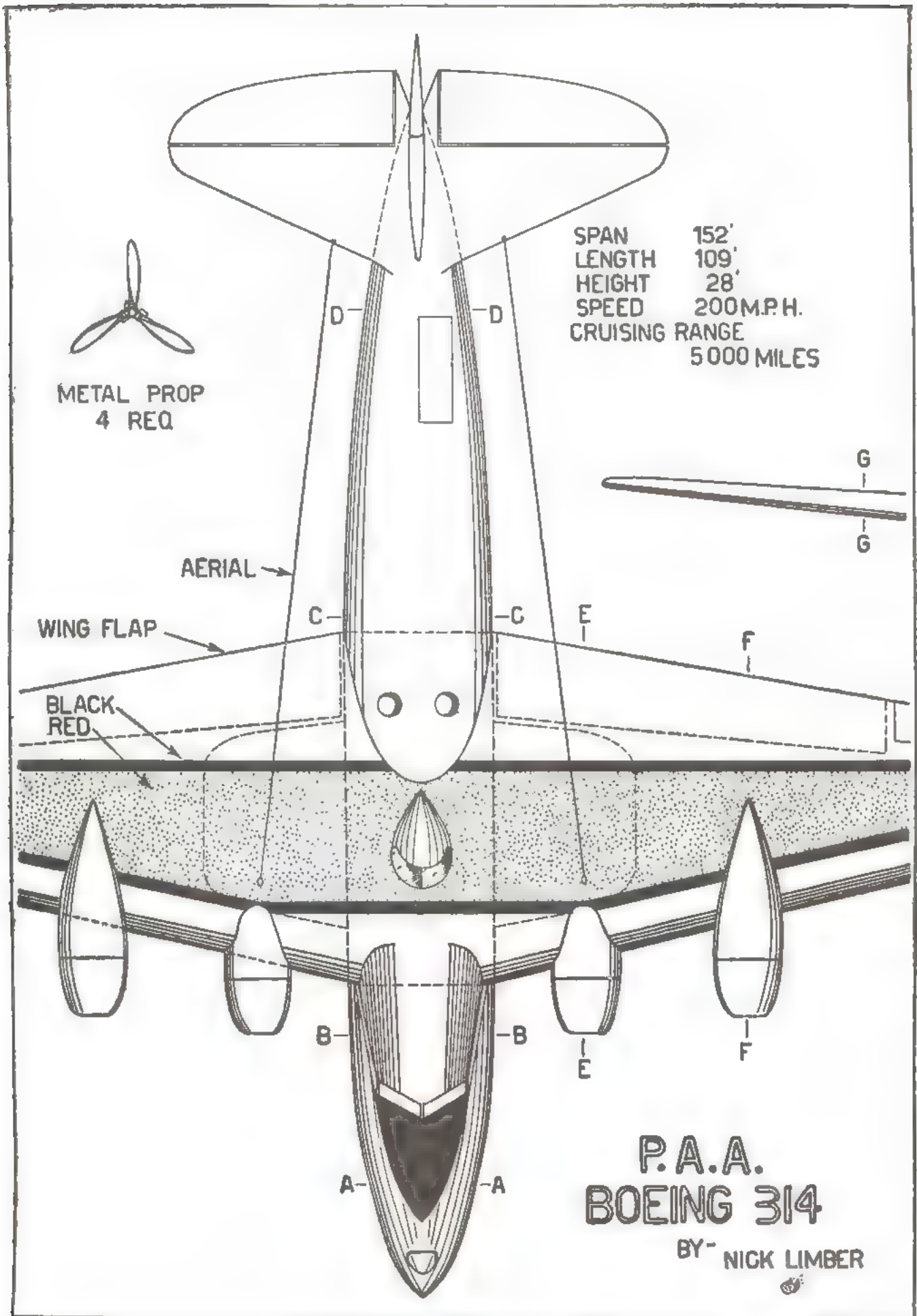
Here's a photo-diagram of Pan American's new four-motored Boeing 314 drawn especially for you by Nick Limber. This great ship will accommodate 72 passengers in regular trans-Atlantic service, and it will carry nearly three tons of mail and freight. The picture shows the disposition of passengers, crew, and cargo.



# THE ATLANTIC CLIPPER—Plate 1









Build This

# "Dragon Fly" Gas Job

Practical efficiency, appearance, and durability, together with economical construction and operation, form the fundamental features of any successful airplane whether it be full-sized or miniature. In our "Dragon Fly"—a neat low-wing of eighty-five-inch span—these requirements are exhibited to a perfect degree. So if you've been waiting for a swell power job, gas fans—here it is!

\* \* \*

**C**OMBINING scale model appearance with excellent flying characteristics, this eighty-five-inch spanned *Dragon Fly* cheerily belies the theory that a heavily-loaded gas model will not perform well. For the *Dragon Fly*, a strongly-built, low-wing monoplane, has a high rate of climb, a smooth and steady glide, and is very stable during flight. What more could a modeler want?

"Clean lines and neat appearance!" you answer.

Very well then, you have these, too, in the *Dragon Fly*! However, you must stick strictly to the plans in building your model. The original ship has been thoroughly tested, and the few changes that were indicated have been incorporated into the accompanying drawings. So follow the plans carefully, and you'll have a good-looking, efficient, and durable power model.

As a word of warning, I would hardly suggest that the absolute amateur in the modeling game try his hand at building this job. Stick to the rubber jobs awhile longer, and then you'll be ready for this one. For the *Dragon Fly* isn't overly difficult to build—you just need to be fairly familiar with the tricks and tools of the game.

## FUSELAGE AND UNDERCARRIAGE

**A**ND now to build the ship! The entire fuselage is of monocoque construction, the strongest and most efficient type of body-work yet designed for aircraft. The first step is to scale up the fuselage drawings from Plans 1 and 2, to full size. Then cut out the bulkheads and the keel.

You'll find the full-size outlines for the bulkheads on Plate 4. The dotted outline of the keel is on the side-view you have by now enlarged from Plates 1 and 2. Bulkheads 3, 4, 5, 6, and 7 are of 2- or 3-ply  $\frac{1}{8}$ " birch plywood. Bulkheads 1 and 2 are made from two pieces of  $\frac{1}{8}$ " balsa sheet laminated with their grain at right angles to each

By Charles Williams

other. Bulkheads 9, 10, 11, 12, 13, and 14 are cut from a single thickness of sheet balsa  $\frac{1}{8}$ " in thickness.

The keel comprises two lengths of  $\frac{1}{8}$ " balsa laminated with their grain running parallel.

When the bulkheads and keel have been shaped, drill all the holes indicated on Plate 4 for the attachment of the motor mount and the landing gear.

Now assemble the bulkheads in position on the keel. Line up each one carefully, making the final alignment as the main stringers (of  $\frac{1}{4}$ " sq. balsa) are being installed. The intermediate stringers of  $\frac{1}{8}$ " by  $\frac{1}{4}$ " stock are added next. Use plenty of cement, and surround all joints with an extra dose of it. Allow to dry.

Since the fuselage is now fairly rigid, the landing gear parts and the motor bearers may be added. Follow the plans for the motor mount installation. Details for the undercarriage will be found on Plate 1 and for the tail wheel on Plate 2.

Make all members—except the tail wheel fitting—from  $\frac{1}{8}$ " steel piano wire. The tail wheel piece is shaped from 3/32" wire. Form and fit these parts from your scaled-up drawings. The front and the long compression struts are bound to the rear strut with fine copper wire, then soldered. While resin core solder is satisfactory, solid solder with muriatic acid for flux should be used if possible. The axles are bent at the ends of the rear struts.

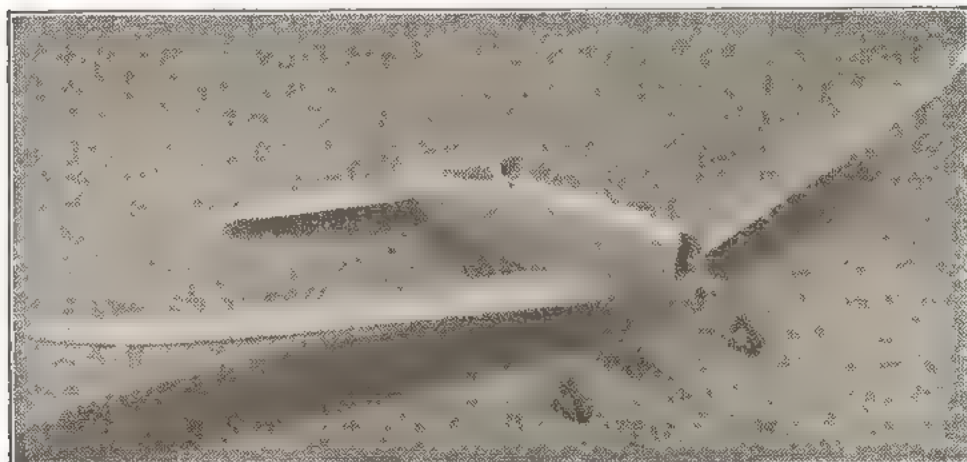
Fit the wire parts in place, and then, using a curved needle, wind thread around the gear through the holes already prepared, until the holes are filled. Then cover the thread heavily with glue.

A  $3\frac{1}{2}$ " airwheel is used on each front axle, with small brass washers soldered to the axles on both sides of each wheel. A 1" airwheel is similarly installed at the tail.

## COVERING THE FUSELAGE

**G**LUE the balsa blocks onto the nose. Shape them to allow for the covering of  $\frac{1}{8}$ " sheet balsa. Allow all cement to dry thoroughly before starting on the real job of covering.

Most tedious of all tasks on the *Dragon Fly* is that of covering it. This job must be done slowly and with extreme care, since the final appearance of the ship, as well as its performance, depends to a con-



Designed to fly with any of the standard  $\frac{1}{8}$  or  $\frac{1}{6}$  h.p. model motors, this "Dragon Fly" possesses beauty as well as excellent flying characteristics. For the purpose of this picture, the prop was left off to show how the motor recesses into the nose.



siderable extent upon the smoothness of the covering.

Balsa strips,  $\frac{1}{8}$ " by  $\frac{3}{8}$ ", are butted against each other to fit closely. Use care, and *use plenty of glue*. Start with the sides, then go on to the top and bottom. Leave space for the final insertion of the center section of the wing. Allow the whole thing to dry thoroughly, and sand with rough and then with smooth sandpaper. Give two coats of nitrate dope, sanding lightly between the coats.

Now apply the silk covering, and add two more coats of dope to finish the job.

#### WINGS

**I**N MAKING the wings, a full-sized enlargement of the wing drawing on Plates 3 and 5 will be found very helpful, both in laying out your parts and also in building up the wing. The first job here, though, is to make the ribs.

The Goettingen 527 airfoil is used. A full-sized outline will be found by fitting together the sections on Plates 1, 3, and 5. All ribs except the first three root ribs are made from  $\frac{1}{16}$ " sheet balsa. Make the root ribs from  $\frac{1}{8}$ " hard sheet balsa.

The smaller and tip ribs are easily scaled down by means of the boxed outline on the airfoil plan. Care should be taken so that when the ribs are stacked together they all follow through in a smooth, even curve.

When all the ribs are finished, lay down the lower spars on a flat board which is soft enough to hold pins (you can use your scaled up wing plan here, too, if you wish). Mark out on the spar the locations for the ribs. Tack down the spars, raising them enough at the ends to give the proper taper to the tips.

Then glue the ribs in place, making sure of course that they are exactly in line. Use plenty of cement. Install the upper spars. Then add the leading edge (of  $\frac{1}{4}$ " sq. soft balsa) and the trailing edge of  $\frac{1}{2}$ " wide stock cut from  $\frac{1}{8}$ " soft sheet. The curved piece at the tip is made from  $\frac{1}{4}$ " soft sheet balsa.

The spars are boxed on both sides, between the ribs, with  $\frac{1}{16}$ " sheet balsa applied as shown in the detail drawing on Plate 3. Don't box the first three ribs until the hardwood blocks are in. Drag trusses of  $\frac{1}{8}$ " by  $\frac{1}{4}$ " stock are next placed in position, each rib being notched to allow the trusses to rest flush with the top of the ribs. Be sure that the wings are in line when the trusses are glued.

Now insert the hardwood blocks, fitting them snugly and using plenty of cement.

Cover the wings with  $\frac{1}{16}$ " soft sheet balsa, as shown. Glue cap-strips  $\frac{1}{16}$ " by  $\frac{1}{4}$ " on the top and bottom of each rib from No. 5 to No. 13 inclusive, to bring these ribs up flush with the sheet covering. Avoid bulges in the sheeting, since these will spoil the efficiency of the airfoil and also the final appearance of the job.

Now you can round off the leading edge, and add the wing tips of  $\frac{1}{4}$ " soft sheet balsa. Sand the whole wing now, being careful not to rub right through the thin stock.

The wing fittings are made next. These are of  $\frac{1}{16}$ " by  $\frac{1}{2}$ " soft aluminum strips.

Each one is made full length, and runs right through the fuselage from wing to wing on the top and bottom of both spars (Plate 5). The holes in wing, center section (instructions for making this will be found below) and fittings must be well centered and drilled straight through. A  $\frac{1}{8}$ " drill will be found satisfactory.

To build up the center section, carefully follow Plates 2 and 5. Leave off one rib at one side, and push the spars between their respective fuselage bulkheads. Locate the center section in its proper location with a positive angle of incidence of  $2^\circ$ . Be very liberal with the cement at all points of contact with the fuselage. Then sheet cover both top and bottom of the center section out to the sides of the fuselage.

Drill the center section holes in the fittings, and bolt  
(Continued on page 96)



Here's Charles H. Adams, author of this "Dragon Fly," gas feature, with his original ship built from the plans you'll find on the following pages.

## Bill of Materials

(Unless otherwise specified, all balsa stock listed below is hard balsa.)

#### Fuselage:

Bulkheads— $\frac{1}{8}$ " soft sheet balsa and  $\frac{1}{8}$ " birch 3-ply-wood;  
Main Stringers— $\frac{1}{4}$ " by  $\frac{1}{4}$ ";  
Intermediate Stringers— $\frac{1}{8}$ " by  $\frac{1}{4}$ " medium balsa;  
Covering— $\frac{1}{8}$ " by  $\frac{3}{8}$ " soft balsa sheet;  
Motor Mounts— $\frac{3}{8}$ " by  $\frac{3}{8}$ " basswood;  
Machine screws;  
Landing gear wire— $\frac{1}{8}$ " dia. music wire;

#### Tail Assembly—Elevator:

Ribs— $\frac{1}{16}$ " medium balsa sheet;  
Wood covering— $\frac{1}{16}$ " soft sheet balsa;  
Spars— $\frac{3}{16}$ " by  $\frac{1}{8}$ ";  
Boxing Material— $\frac{1}{16}$ " medium sheet balsa;  
Tips— $\frac{1}{8}$ " soft balsa planks;  
Leading edge— $\frac{3}{16}$ " by  $\frac{3}{16}$ ";  
Trailing edge— $\frac{1}{8}$ " by  $\frac{1}{8}$ " soft sheet;  
Truss members— $\frac{1}{8}$ " by  $\frac{1}{8}$ ";  
Cap strips— $\frac{1}{16}$ " by  $\frac{1}{4}$ ";

#### Rudder:

Leading edge— $\frac{1}{8}$ " soft balsa sheet;  
Trailing edge— $\frac{1}{8}$ " by  $\frac{1}{8}$ " soft balsa;  
Ribs— $\frac{1}{8}$ " medium sheet balsa;  
Spars— $\frac{3}{16}$ " by  $\frac{1}{8}$ ";  
Tip— $\frac{1}{8}$ " soft balsa plank;

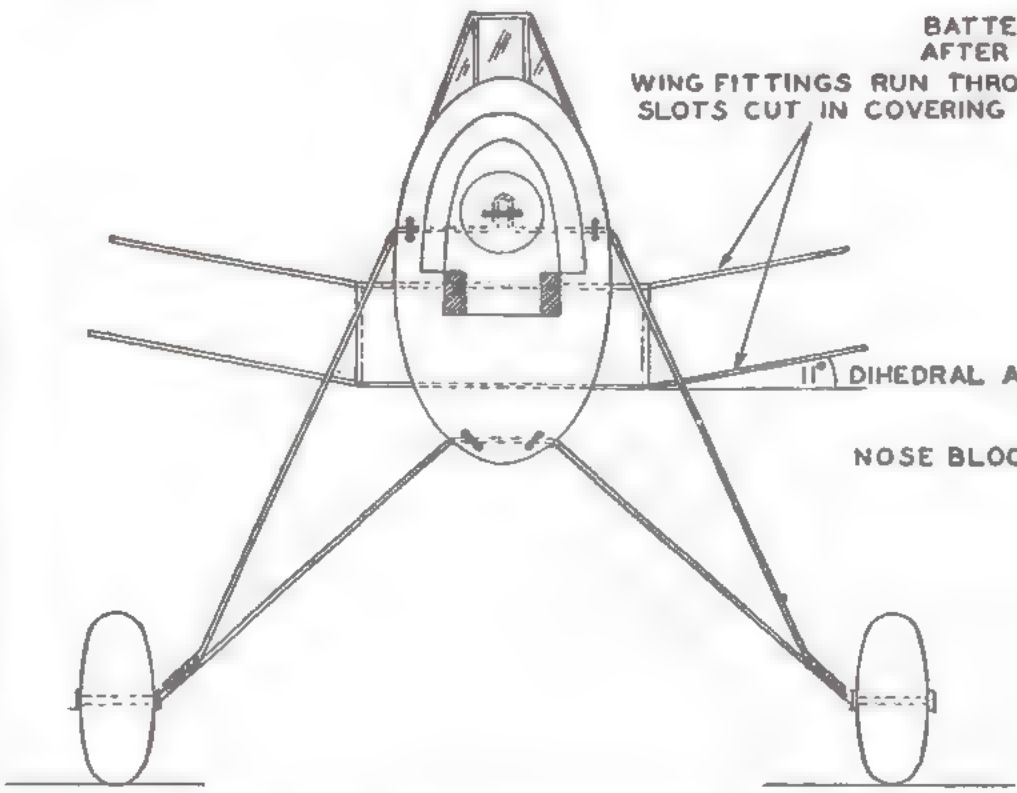
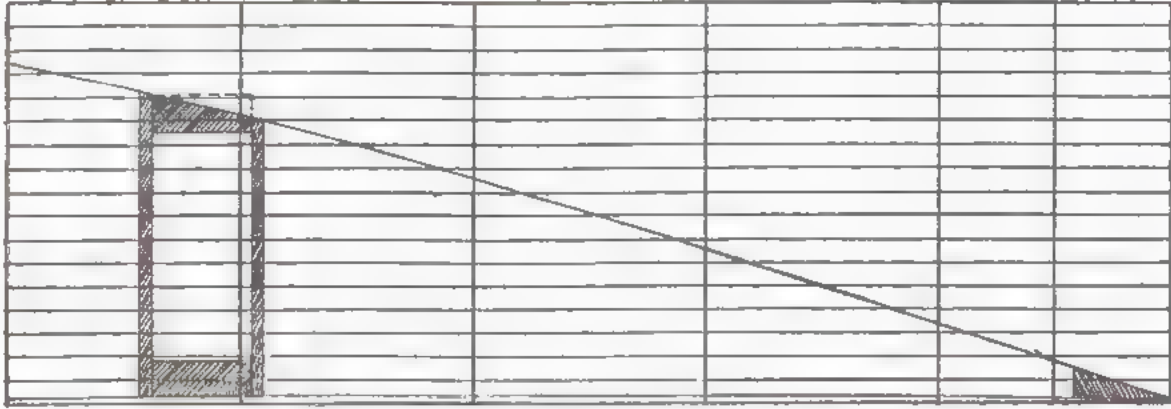
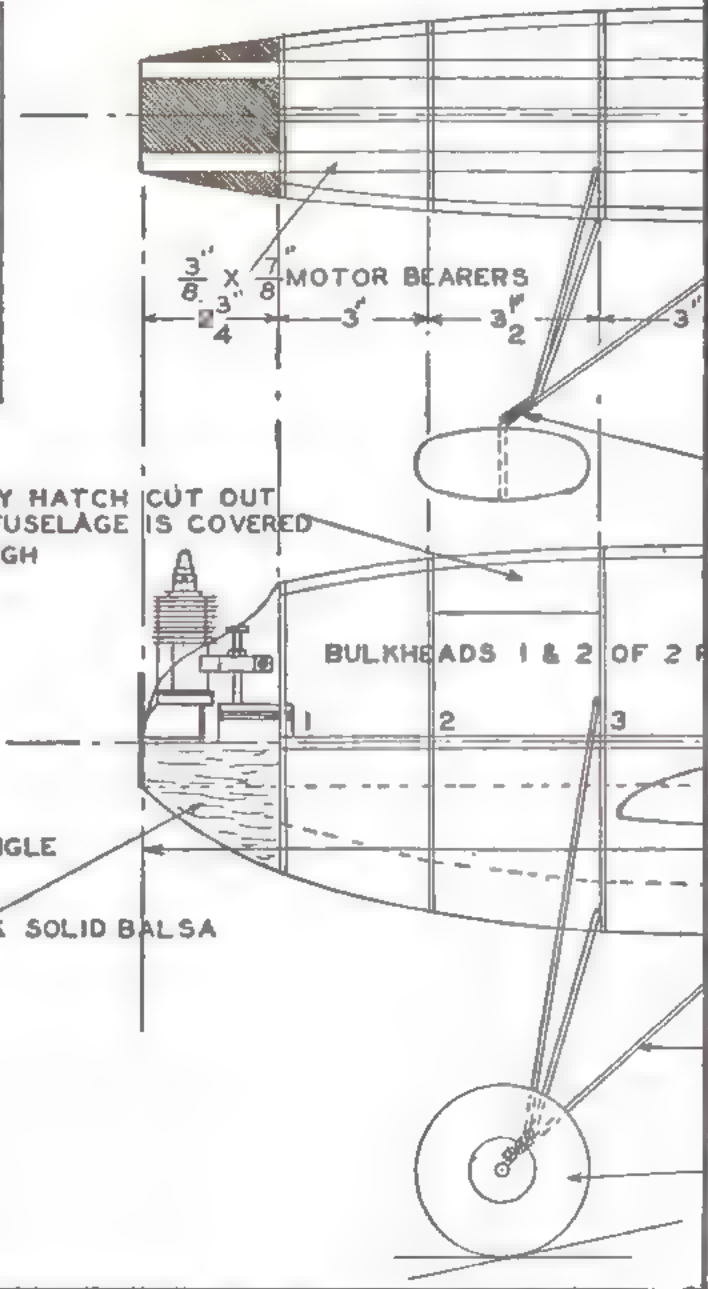
#### Wings:

Spars— $\frac{3}{16}$ " by  $\frac{1}{8}$ "  
Ribs— $\frac{1}{16}$ " medium sheet balsa;  
Cap strips— $\frac{1}{16}$ " by  $\frac{1}{4}$ ";  
Drag trusses— $\frac{1}{8}$ " by  $\frac{1}{4}$ ";  
Wood covering— $\frac{1}{16}$ " soft sheet balsa;  
Tips— $\frac{1}{8}$ " soft balsa plank;  
Leading edge— $\frac{1}{4}$ " by  $\frac{1}{4}$ ";  
Trailing edge— $\frac{1}{8}$ " by  $\frac{1}{8}$ " soft balsa;  
Boxing material— $\frac{1}{16}$ " medium sheet balsa;  
Hardwood blocks— $\frac{1}{8}$ " curly maple plank;

#### Miscellaneous:

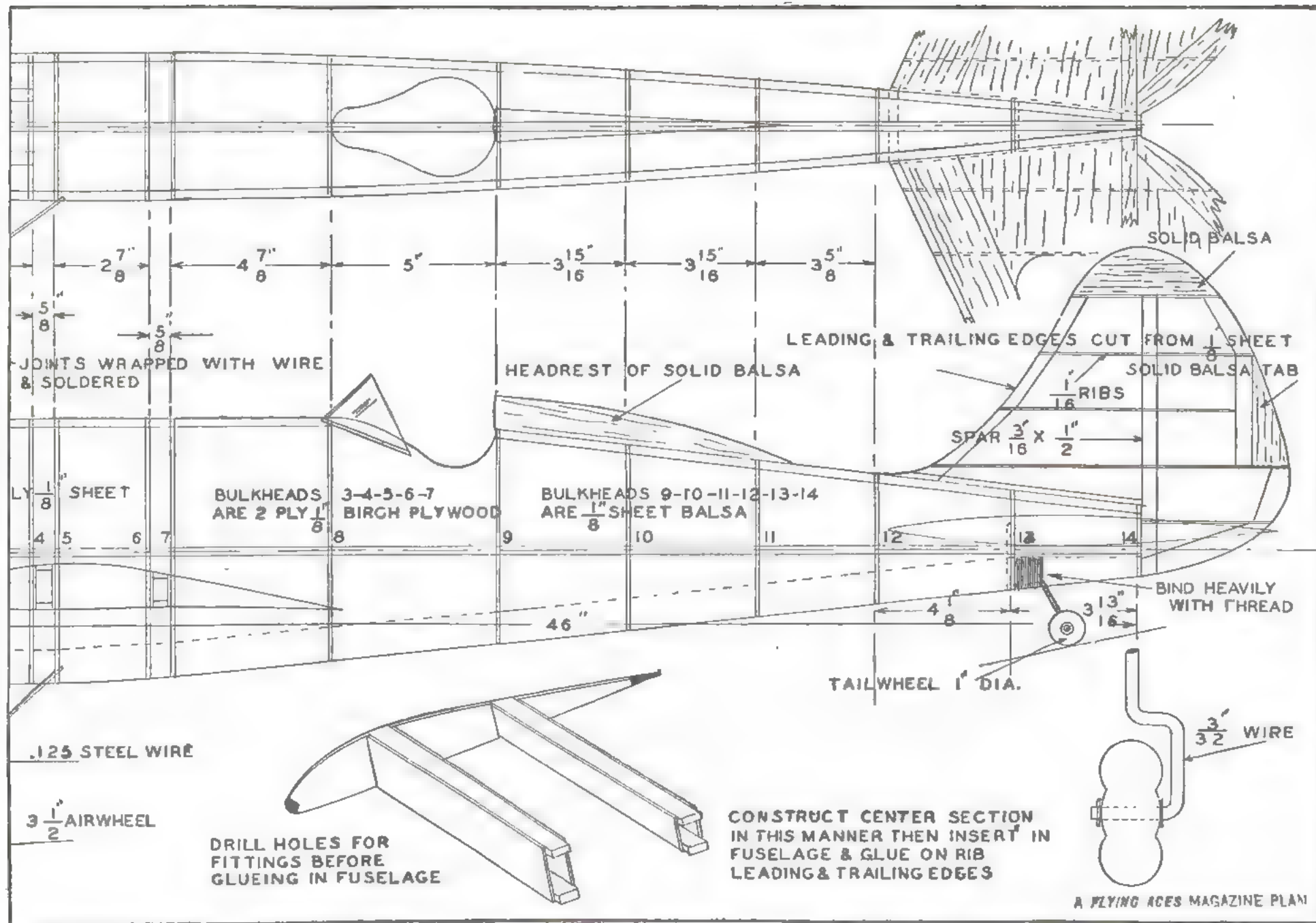
$\frac{1}{16}$ " by  $3"$  by  $36"$ —30 sheets required, soft balsa;  
 $\frac{1}{8}$ " by  $3"$  by  $36"$ —11 sheets required, soft balsa;  
 $\frac{1}{8}$ " birch plywood—2 sq. ft. required;  
 $\frac{1}{4}$ " by  $\frac{1}{4}$ " by  $48"$ —5 required;  
 $\frac{1}{8}$ " by  $\frac{1}{4}$ " by  $48"$ —12 required;  
 $\frac{3}{16}$ " by  $\frac{3}{16}$ " by  $36"$ —1 required;  
 $\frac{3}{16}$ " by  $\frac{1}{8}$ " by  $40"$ —11 required;  
 $\frac{1}{16}$ " by  $\frac{1}{4}$ " by  $36"$ —10 required;  
 $\frac{1}{2}$ " by  $3"$  by  $6"$ —3 required, soft balsa blank;  
 $\frac{1}{2}$ " by  $3"$  by  $8"$ —2 required, soft balsa plank;  
 $\frac{1}{2}$ " by  $2"$  by  $30"$ —1 required, curly maple plank;  
Silk—5 yards;  
Aluminum;  
Cement; piano wire; solder; brass washers; dope; heavy thread, etc.





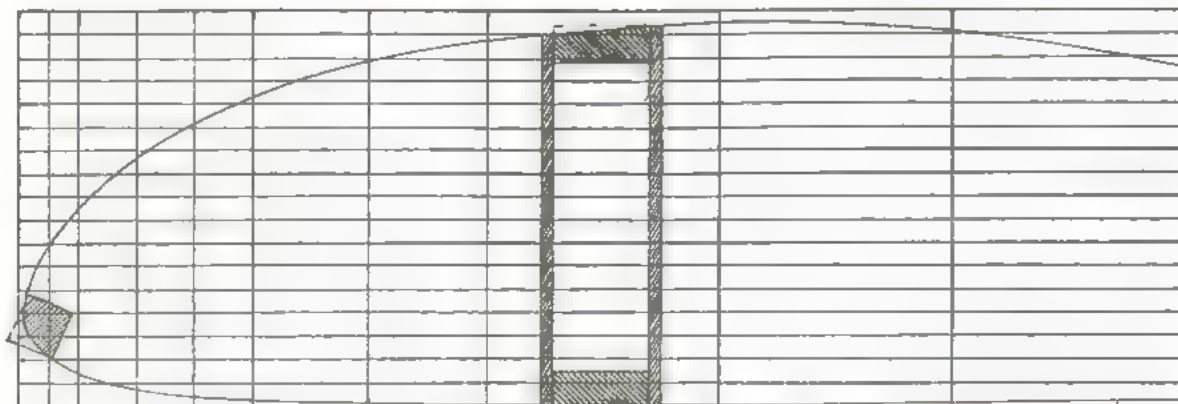
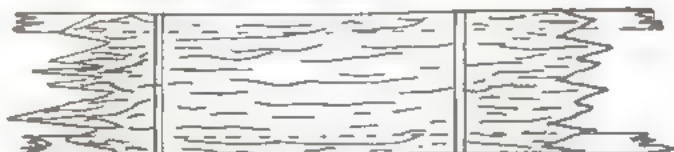
THE "DRAGONFLY"  
FOR 1/4 OR 1/2 HP  
DESIGNED & BUILT BY C.K. WILLIAMS  
SCALE 1/4" = 1" PLATE - 1  
A FLYING ACES MAGAZINE PLAN



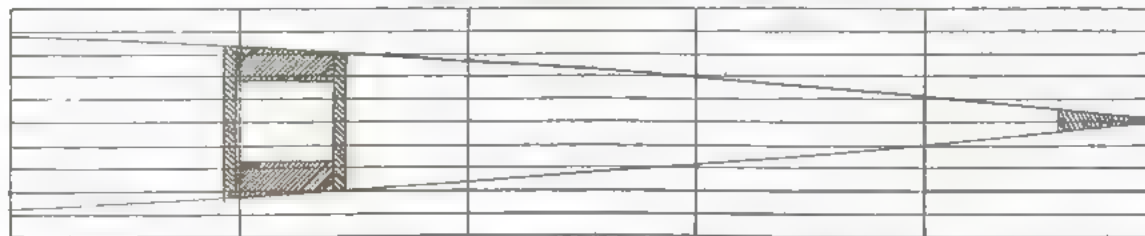




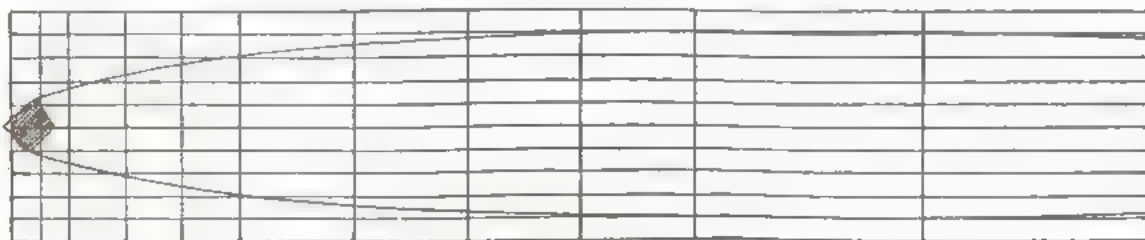
DETAIL OF BOXING



GOETTINGEN 527 FULL SIZE

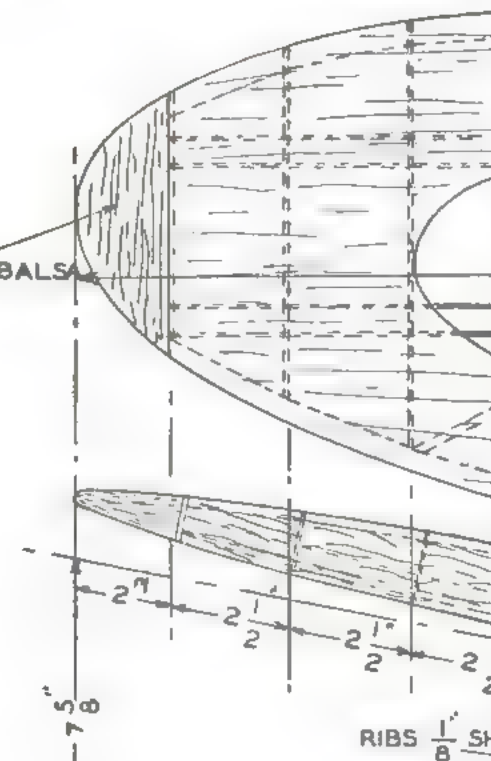


SPAR STRUCTURE OF HORIZONTAL & RUDDER STABILIZER



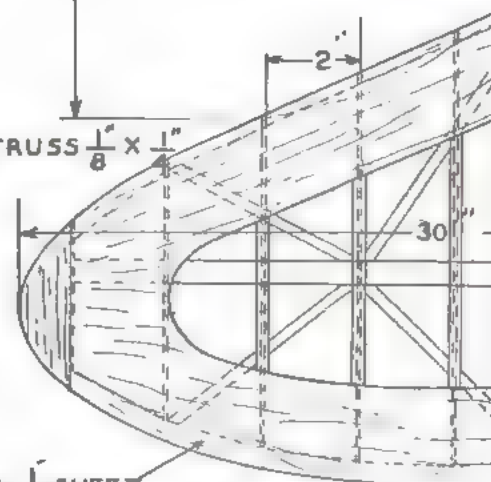
BASIC TAIL SECTION

TIPS SOLID BALS



RIBS  $\frac{1}{8}$ " SH

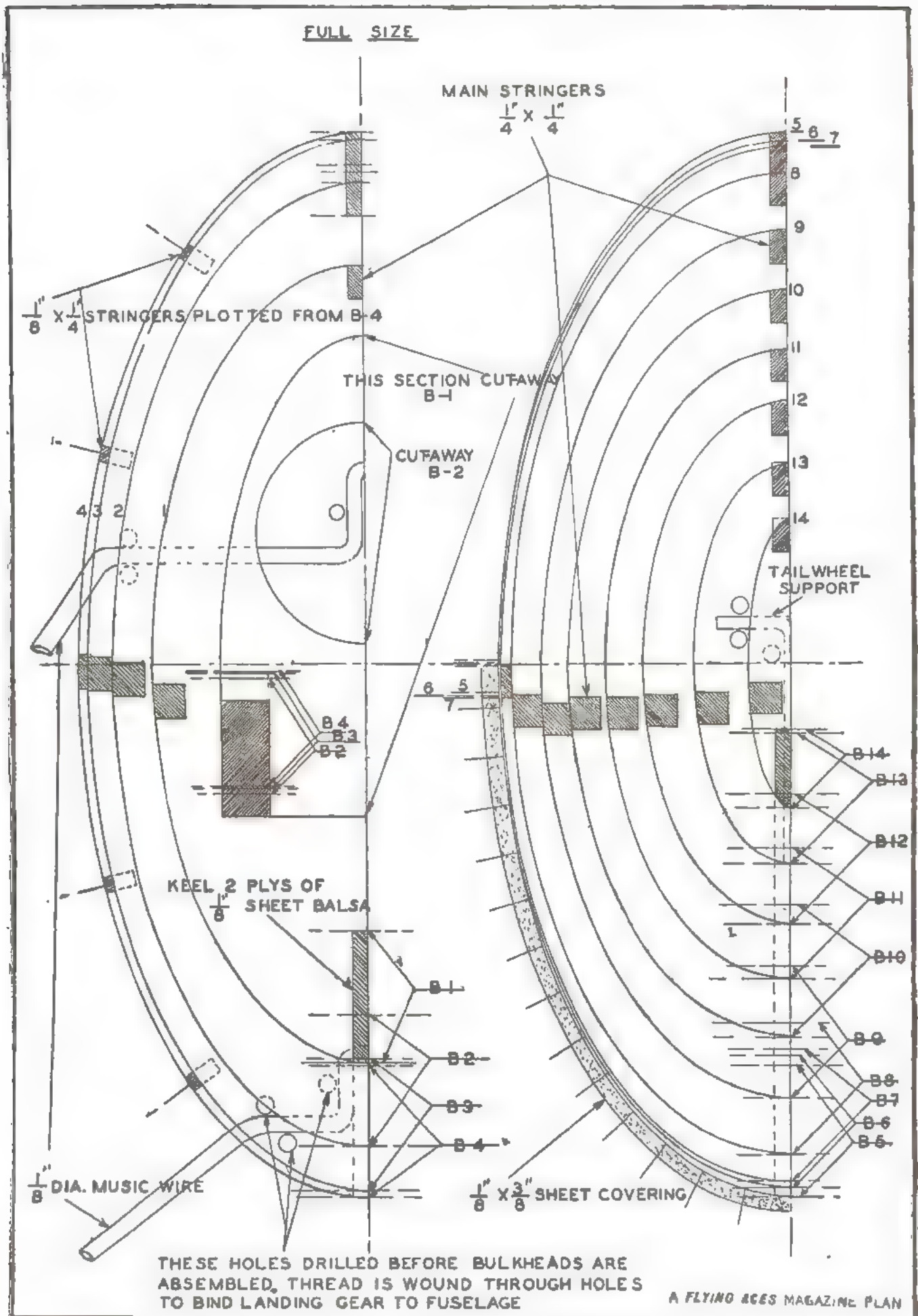
DRAG TRUSS  $\frac{1}{8}$ " X  $\frac{1}{4}$ "



CUT FROM  $\frac{1}{8}$ " SHEET



# BUILD THIS "DRAGON FLY" GAS JOB—Plate 4









## Workbench Tips

• • •

### MANICURING MODELS

**M**ANY times I have found that the ordinary manicure tools make swell help in model making. For a substitute file on balsa wood, use mother's (if she'll let you!) fine emery board. And those hair clips, again from mother but perhaps better from the five-and-ten, perform nobly in holding wood together while the cement is drying.

In trimming excess tissue from the wings or fuselage, ordinary nail scissors are useful and are even safer than razor blades because there's not so much danger of a "mis-cut." But where you *do* use razor blades, you can be sure of a permanent and ready supply if you'll build a neat little box into which Dad can drop his when he's through with them.

And while this has nothing to do with manicuring apparatus, you'll find you can make a swell cement by dissolving scrap celluloid in acetone and adding a small piece of camphor. Keep the bottle well corked and away from flame.

Good wing and tail lights can be made by painting apple seeds the desired color, then cementing them in place.

—JOEL ISENBERG

### TAIL SKID SUGGESTION

**T**AIL SKIDS on most model ships are springless, hence they frequently break when the model comes down to a rough landing. A good way to avoid this is by using a shock-absorbing skid made as follows:

Instead of cementing the skid directly to the bottom of the fuselage, run a wire axle through the skid at approximately (depending upon the model) one-third of the distance from the upper end. Then secure the axle across the bottom of the fuselage in the way that best suits your ship so that the skid will pivot on it.

Next, attach a short length of strong elastic to the upper end of the skid, which, of course, is now inside of the fuselage at the tail; and then carry the end of the elastic backward through the fuselage and attach it directly to the rudder post. No slack should be allowed. This method will give a strong, shock-absorbing tail skid and may also be utilized on tail wheels.

—STIRLING POST

### HOW TO CAMOUFLAGE MODELS

**A**LTHOUGH many model builders have experienced the desire to apply camouflage to their models of wartime planes, they haven't always known how to go about it. So here are a few hints that

I have found practical.

For best results, use a good grade of quick-drying enamel. Dark oak and green are good colors for Allied ships, since these were fairly standard shades. First sand all parts of the ship, then apply the dark oak enamel. Leave all details such as machine guns, tires, etc., to be colored black, later.

When the dark oak has thoroughly dried, sand it lightly and give it a second coat. Then sand again, and apply the green enamel in irregular spots and blotches.

To camouflage German ships such as the Gothas and Fokker D-7's, use light oak, gray, light blue, green, and black. First paint all parts light oak, and then splotch the ship with the other colors.

All insignia should be applied before the camouflage, and in some cases it might be better to apply the basic coats before assembling the ships.

—EDDIE POTOSKI

## The Market Log

• • •

**N**OW that Old Man Winter has tightened his grip, it is only natural that we turn our attention toward the Golden West, its bright warm sunshine—and its latest contributions to the Model Airplane Industry.

Bunch Model Airplane Co., 5011 South Hoover St., Los Angeles, Cal. For modellers with nautical blood in their veins, this company has just designed new float gear equipment adaptable to any 3 to 6 pound gas model. The complete gear weighs 12 ozs.; and in exhaustive take-off and landing tests, it has proven itself successful.

The floats are available to the model builder in three forms; namely, as a complete kit with all materials for construction, for waterproofing, and installing on any model, at \$6.75; as a "dry" kit minus chemicals, fabric, and strut wire at \$3.00; and in plan form with complete instructions for construction at fifty cents.

Reginald Denny Industries Inc. 5751 Hollywood Blvd. Hollywood, Cal. To complete their ever-growing line of gas model supplies, Denny Industries have recently developed a miniature power plant known as the Dennyrite. Weighing 14 ozs. including the dural motor mount, coil, and condenser, the Dennyrite develops 1/5 h.p. It is designed so that it may be bolted to the firewall of any model without being removed from the dural mount upon which it is shipped.

Both cylinder and piston are con-  
(Continued on page 89)

## What Do You Say?

• • •

### WHAT! NO MEDICINE DROPPER?

Editor, FLYING ACES:

Greetings and salutations from a dormant but not dead F.A.C. member. I had a good reason for taking "time out," and here it is.

'Way back when—when I was prosperous—I had developed a mild skill in model-making. So I embarked on a great undertaking; namely, a gas job!

For many months I labored on my brain child with time, money—and *more* money. And I finally brought my masterpiece out under blue skies where she could spread her mighty wings and soar with the thermals.

She tested perfectly. So poor little ignorant me filled the tank and adjusted the rudder to what I thought would make a nice big circle in the middle of which I could just "park the good ol' lazy carcass" an' watch her fly. But it turned out that the rudder was set just enough to counteract the torque and away the wench went in a *straight* line!

We hopped into my friend's car and tried to follow the blamed thing. We kept an eye on it from the car for about five miles. Then we ran into some woods and had to "leg" it.

If you've ever tried to run 15 m.p.h. through thick woods you know what we were up against. So the last we saw of the ship was a black dot in the sky, still flying in a straight line away from us.

I've been hoping for news for the two years since but haven't heard anything about it yet.

I promptly swore off model building (and used a little of the other kind of swearing also) when I saw about three months of solid effort and about thirty-five dollars' worth of airplane go "kissing the ozone."

But I'm in it again—although I'm sticking to nice little solid scale models that do *not* fly.

GEORGE J. WEBER,  
St. Louis, Mo.

### WANTS ADVICE!

Editor, FLYING ACES:

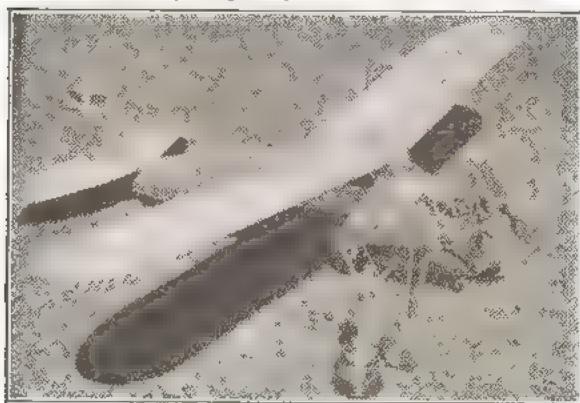
I've been wondering how an ambitious, 13-year-old lad like me could get started on a model builder's career. Should my first model be made from a fifty-cent or a two-dollar kit, or should I get basic supplies and try my hand at the models described in FLYING ACES?

I'd like to get several opinions, so some of you fellows please write and help out a poor chap in distress. Address me in care of the Editor, if he doesn't mind. I'll be looking for mail.

CLIFFORD CONRAD,  
Minneapolis, Minn.



Winner of the G.M.A.A.S.C.'s "appearance trophy" at the last Pacific Coast championship meet, this Ohlsson-powered monoplane was designed and built by Harold Bull. It bears the membership insignia of the Association on its tail.



Fellows, when a gas model club can operate its own airport, run its own public address system, hold contest meets that attract nation-wide attention, and—yes, and promptly pay its own bills!—you've got to admit that such a club is a successful one. And believe it or not, there is such a club! So, writing from the experience gained in its organization and operation, Frank Knapton here gives you the lowdown on—

## How to Run

# A Successful Gas Club

\*\*\*

**I**N ASKING me to write this article, the editor of *FLYING ACES* said he wanted some practical hints that would help any group of live gas model fans get together and have a good time with their hobby without running into trouble.

Well, I'm not a writer—as a matter of fact, I'm a machinist. So rather than draw up a set of rules, my best bet is to tell about the experiences we ourselves have had in gas club work here in Los Angeles. As I write, I am keeping in mind the needs of gas fans in the average large city. And I'm suggesting that rather than follow our Association's lead right to the letter, petroleers might simply accept my hints for whatever they may be worth in their own particular localities and circumstances.

Our own Gas Model Airplane Association of Southern California of which we're mighty proud, has a good reputation. We've had some extremely favorable reports concerning our activities in the newspapers and model magazines. And visitors from far and near have told

**By Frank Knapton**

Chairman, Field Committee,  
Gas Model Airplane Association  
of Southern California, Inc.

us repeatedly that they've been highly impressed with the signs of our progress since the club was first formally organized in June 1936.

'We've held some highly successful contests, almost our entire membership uses our gas model airport at some time during each week, there's hardly a regular meeting passes without our signing up at least one new member, and every member of the club is definitely *active*. We operate our own "airport," we have our own public address system and we have the earnest cooperation of model dealers and manufacturers. And a Hollywood movie outfit is even preparing a scenario about our activities!

These things sound as though we might be bragging a little. We're not! I'm just repeating them, for they're the things that attracted the editor's attention when we first got together about this article. So it seems that we do have something to talk about when we call our Gas Model Airplane Association of Southern California a *successful* gas club.



Excellent publicity was gained for the G.M.A.A.S.C. when several members displayed their gas craft, beneath this "grounded" Fokker F-33 at the Happy Landing gas station of Bob's Airmail Service in Los Angeles. For two successive nights, the miniature ships stopped all traffic in the vicinity of the station. And we can't help wondering what the big fellow thought of all the commotion concerning the little shrimps beneath him!



When we first organized, a gang of us had been flying our gas jobs haphazardly from vacant lots and nearby landing fields. And we'd been ordered off the latter so many times that we knew almost to a second how many flights we could get in before some official would come dashing out to shoo us away. On some fields, we were allowed an occasional hour or so in the very early mornings. But that wasn't enough.

So it seemed that our best bet was to organize formally as a club, and we'd at least have a talking point then in asking for permission to fly. (And incidentally, we've found since that where there may be several unassociated clubs in one community, it's far better for them all to organize under one single name or association. For one large club has far more power than a stack of little ones when it comes to combating adverse conditions or proposed harmful legislation of the type sprung on the boys in Massachusetts and Connecticut.)

Anyway, in June 1936 we held our first official meeting. I was elected temporary chairman, and six members were appointed to draft a constitution and a set of by-laws. How well they did their work can be judged by the fact that only two amendments have been made since.

Elected officers were named to serve a period of six months. The only exception was the treasurer, who was to serve a full year. This officer, by the way, is always bonded, and the organization pays the bonding fee. Our usual officers include a president, vice president, secretary, and five members of the Board of Directors.

We have always been fortunate in our selection of officers, practically every one having been able to serve out his full term and all have been very considerate of, and attentive to, their duties and responsibilities. By the time this article appears in print, our new officers for the first half of 1938 will have been elected. Who they will be, we have no idea, as yet.

There's one sure thing, though. They'll have one of the toughest assignments on their hands that any group of model club officers has ever encountered! You see, our constitution calls for two contests each year, an arrangement that gives all successive groups of officers a chance to



Cooperation counts in club work, says the writer of this article. And to prove it, here are Henry Stiglmeier, Harold Ball, and Frank Bart. They are conferring about the use of a turn motor on gas jobs. It is said that Stiglmeier carried on when the picture was taken. For we've been wondering what he looks like ever since he co-authored with Ken Hamilton on that swell PT-11 model feature in our November issue.

show what they can do. But our first 1938 contest will be the biggest gas meet ever held. More than five hundred ships are expected to fly in one day for the gas model championship of the entire Pacific coast. The meet will be held in early June—and that's the job facing our next batch of officers. Wish 'em luck, readers!

The present officers of the Club are: Tom Trulson, president; Earl Harp, vice president; J. Williams, secretary; and Grant Carder, treasurer. Not only at the last meet but throughout their terms of office, these men have been performing splendidly, and they deserve a heap of credit for our most recent progress.

Incidentally, no officer of the club receives any salary or allowance, nor can he serve if he makes the major part of his living through the model airplane industry.

Our regular meetings—non-flying, of course—are held at Manchester Playground, a Los Angeles-owned reservation where we have free access to a lighted building. The playground staff has spared no effort in making us comfortable, and we try to reciprocate by keeping the place free of cigarette stubs and trash and by



Top: Harold Ball (left) and Association President Tom Trulson address a group of Hollywood air cadets. Yep! The subject's gas models! Bottom left: The G.M.A.A.S.C.'s public address system in operation at the only gas model airport in the world. Mounted on H. E. Fredrickson's car, the speakers are used to make announcements and warnings. Bottom, right: Webb Hill repairs his Cyclone-powered "Boom Tail" in one of the repair pits of the Association field.



conserving as much on current as we possibly can.

The club meetings are well-attended. Usually fifty to eighty or more of our 125 members are present. Every member must own a gas model. In age, our fellows run from young Dean McMillen, who is twelve, all the way up to J. J. Williams, who's over sixty!

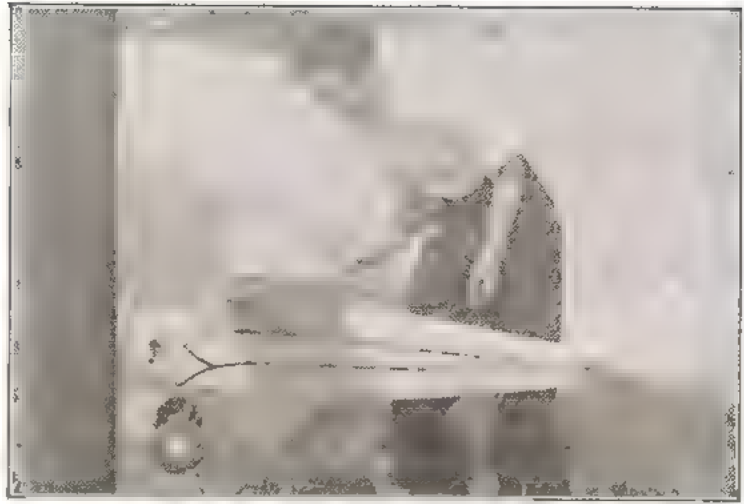
The younger fellows are pretty well scattered through the various committees. Thus they learn the business background of the club and prepare for the time when they will hold regular offices in the organization.

Two meetings are held each month (on the first and third Thursdays). We always plan to have an outside speaker present at one of them. Reginald Denny, the movie star who's also a famous gas fan, spoke interestingly at a recent meeting. After the "speech," the meetings usually finish off with a lunch.

Early in 1937, the club was incorporated under the state laws of California. We did this because we'd learned that under the old set-up, any individual member of the club could be held responsible for liabilities that we might incur.

Each member pays twenty-five cents in dues every month. And new members pay a one dollar initiation fee. The fee entitles the chaps to use our field at all times, but should anyone become behind in his dues he's charged five cents admission to the field and five cents for his ship. If he gets behind six months, he is automatically dropped from the lists. And we make no effort to dig up a new member to take his place—instead the applicants look us up. We have something *they* want—and not necessarily something *we* need to sell.

We make a little extra money through the soft drink concession at the field. The concession is operated by H. E. Fredrickson, one of our members, and our cut from the gross sales nets us from three to five dollars weekly. Fredrickson also operates our public address system, which is mounted on his car and used at all times to warn spectators and to make announcements.



Here's the model game's most unusual picture! This ship, built by G.M.A.A.S.C. member Sandy Abrenica, struck the telephone pole so hard that the prop shaft was driven into the wood. The ship was held suspended, as shown, and the prop wasn't even broken!

When we first started operation, we made an arrangement with a local airport to use part of their field. The manager charged a five-cent admission fee to onlookers and kept the weeds down for us, and the association did the policing during flying periods. It soon became apparent, though, that model airplanes didn't have any business on a regular airport. For if the models weren't in the way of the big ships, the big fellows were in the way of the models.

So last February, we arranged for the use of seventeen acres of land near the airport at a rental of twenty-five dollars per month. We've been using it ever since, and our "airport"—the only strictly gas model airport in the world—has proved mighty successful. We drag the field regularly, several members adding their weight every Saturday morning to the heavy drag which is pulled by an old truck rented for two-bits per hour.

And after this hard work, "Irish" Trulson, the club president's wife, usually serves lunch at the field. And man! Can this gal cook! As a matter of fact, we have quite a staff of good cooks in the outfit, and they're always on hand with something to eat at the right time. Every once in a while we stage a spaghetti dinner out at the field. We charge around thirty-five cents per plate—which barely covers expenses—and everyone eats as much as he can. We all have a swell time. Oftentimes the dealers and manufacturers join us at these times, which makes for closer friendship between all of us in the modeling game.

Most clubs, it seems, organize for the sole purpose of buying material at a discount. And thus they establish a barrier between themselves and the supply-men. The sellers thus make less profit, so when the modelers need their support, they get it only half-heartedly—and sometimes, as a matter of fact, they don't get the support at all!

We don't work that way. The dealer is entitled to a legitimate profit on his sales, and we don't want to cheat him out of it. Of course, in our contests, we depend upon the dealers to furnish a portion of the prizes that are awarded. And in our case, because



Even gas model fans take time out to eat! So in the shot above we show the Southern California club's food production line, and at the right we give a glimpse of the consumers. "Irish" Trulson, wife of the club president and famed as quite a chef-ess is the leading lady at the left of the cooks' line-up. The other girls are, respectively, Mrs. Earl Harp, Peggy Snyder, and Mrs. H. C. Orwick.





we haven't screwed them down which we might have done, they've responded beyond our wildest dreams. The dealers are swell fellows, and we're for them!

Some of them, incidentally, have not only supplied model material and trophies and the like for prizes, but have even offered cash to help cover expenses. The prizes, of course, have been accepted with appreciation. But the money has always been refused. This has been our policy right along, and it always will be. Our Association pays its own way, and our bills are balanced by receipts from dues, initiation fees, concession percentages, admission charges, and other legitimate sources.

We're extremely careful about operation of our gas model airport. We have a definite set of safety rules that applies to *everybody*—spectators, flyers, newspapermen, photographers, officials, and so on all the way down the line. On Sundays we have twelve men detailed to police duty. You see, the regular field committee—of which I am chairman—consists of six men who sell tickets, direct the parking of cars, and keep a general eye out all around. Then six other men are detailed weekly to keep spectators "in line" and on the alert for incoming ships.

And while more than thirty thousand people have visited our field, only three injuries, all very minor, have been incurred. This is a record that cannot be surpassed in any sport, and we're proud of it.

Modelers who come out to fly choose their pit from the row of pits marked off at the end of the field. All repair work must be done right in the pits, and no tools are allowed on the flying line. Spectators stand behind the pits, and are thus able to get good close-up views of the ships

and to ask any questions they wish concerning them. Courteous answers are always given in as much detail as time and the job in hand will allow.

Our theory here is that the visitor wouldn't be there if he were not interested in gas model flying. So we're interested in him as a means of keeping up our membership roster and also as a means of covering our expenses for the field. So it pays to be courteous in more ways than one. And a little decency isn't wasted anywhere, nowadays, when there's so little of it in the general run of life.

When a modeler is ready to fly his ship he goes out to the "flying zone." He can remain there as long as he wishes—if his craft is flying. Thus, the chap who keeps his power plant and ship in good shape can run up some good flying time. One member, George Roach, hung up fifty flights in four hours not long ago with his Ohlsson-powered Pacific Ace.

It isn't at all unusual for us to have as many as seventy ships on the line. And hardly ever do we turn in less than three hundred flights on a normal Sunday morning! And interestingly enough, seventy percent of the ships land within two hundred feet of where they took off!

Since the weather around Los Angeles seldom permits good flying after mid-day, we usually try to discourage further attempts after that time. The wind comes up and carries ships away from the field. This might permit some swell duration records, but we're not after 'em.

As a matter of fact, the Association has gone on record condemning the so-called gas model "floater" and favors a fairly heavy wing loading for ships. We believe it is detrimental to the gas model game to allow big ships with a full load of fuel to take the air, and then have the lives of in-

nocent people on the highways endangered by club members' cars careening through traffic while the "running board crew" tries to keep the floating ships in sight. And where are those ships going to land?

It's dangerous, and it's foolhardy. And it's the kind of thing that has resulted, at least partly, we believe, in the recent Eastern legislation against gas model flying. We prefer to spend our flying time *flying*, and not chasing around the country on the running board of a speeding car.

We are considering making it compulsory for gas model flyers who use our field to equip their ships with ignition timers. (According to news which we are printing more fully in the "News of the Modelers" section, the newly formed Gas Model Division of the N.A.A. will limit engine run to 40 seconds—Editor.)

And in this same connection, we have requested the State Highway Patrol and also the Department of Commerce to give us a hearing at any time there is pending legislation that might be harmful toward our hobby.

Last June, we staged a contest for the championship of the Pacific Coast. This was without a doubt the greatest model airplane show ever held anywhere. Two hundred and thirteen ships were in the pits at the appointed time. They were each allowed two flights. The show itself lasted four hours, and it took two hours more to give out the prizes.

Several ships were in the air all the time. Six thousand persons and fifteen hundred automobiles were on the field. The spectators each paid ten cents and the entrants each paid fifty cents entry fee. Of course, we did not collect from *all* the spectators—there will always be gate crashers even for a dime!

(Continued on page 91)



## ALL REVVED UP for the

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# FLYING ACES

## Hell Hammers Harbin

MARCH, 1938

(Continued from page 8)

from the senior British Intelligence officer at Hong Kong, from whom I've received orders ever since the Japs seized Manchukuo. He said that the United States had asked secret assistance on a matter of vital importance and that Moscow was also co-operating since the move was considered to be advantageous to Soviet interests. Both of you were named and described and your recognition numbers given. Your ship was also described, and the message stated you would be flying from Shanghai with orders from General Brett, chief of American Army Intelligence."

"Then you haven't heard from Brett directly?" interrupted Knight.

"No, though there's a chance he may have called me while I was across the border at the Soviet squadron south of Lake Khanka. That's where the second message directed me to go, so a Russian two-seater was over for me just after dusk. I haven't dared keep a ship near here, though I was trained originally for air intelligence. But when I arrived across the border, I found that my chief at Hong Kong had arranged for me to borrow a 2KB and be ready to escort you on your mission. Those two fighters you saw with me were sent to distract attention from me and cover up the sound of my motor when I circled down to land here. It was purely a coincidence that we arrived over Harbin during that battle. When I recognized your ship from the description, I signaled the Soviet pilots to help me drive off the Japs."

"For which we're thankful," said Knight. "But this leaves us in a bad spot. General Brett wouldn't have appealed to your government unless a grave emergency had arisen. Also, he wouldn't have been so careful to mask his instructions about finding this place, unless he thought that some one would be combing the airways even up in the ultra high-frequency bands we've developed for espionage work. It may be that he's waiting to be sure we've had time to land here before he sends his final orders."

"I'm due to listen in for Hong Kong in about forty minutes," said Creele. "But we might as well have a bit of dinner while we're waiting. I'm hungry, and you chaps must be starved."

Knight shook his head.

"Count me in," said Doyle. "Better change your mind, Dick. This may be the last call this side of a prison-camp."

"Not now," said Knight. He

glanced absently at the wardrobe cabinet, watched Creele carry a bottle of wine and some food from the locker to the table. "About those strange explosions, have you any theories at all?"

"They looked like chemical fire the way they mushroomed up," the false monk answered. "But where could the stuff have come from? And who beside the Soviet could have done it? The Chinese up here are powerless."

"How much information do you get on things beyond Harbin?" asked Knight. "And how close are you co-operating with the Soviet? They could be doing a lot of things under cover."

"I get reports from a hundred sources in Manchukuo," Creele said firmly. "As for Russia, we've been working with them a lot more than is generally known. If it comes to a war, we'll probably be allied with her against Japan and Germany; that's my main reason for being here, to help strike against the Japs when the time comes."

Knight heard only part of the answer. His eyes were fixed on the handle of the wardrobe cabinet, and now he was sure. The handle had been turned, a fraction of an inch at a time, until now it was almost straight up and down. He slid his hand inside his coat, grasped the butt of his automatic. As he drew out the weapon, Creele halted, staring.

"Why the gun, Knight?"

**A**BRUPTLY there was a muffled sound from inside the wardrobe cabinet. Knight leaped aside just as the door flew open. An arm flashed up, and the lamp-light shone on blued steel. Knight fired twice, so swiftly



that the roar of the other man's gun made the three reports seem like one. Creele stood paralyzed as a yellow-faced figure tumbled out headlong onto the floor.

Knight kicked a smoking pistol from the fingers of the man he had shot. The dying Oriental tried to lift himself up, collapsed. For a moment longer, as a red stain widened on his left side, he glared up with a look of hate that encompassed all three white men. Then suddenly his tor-

mented gasps ended, and the fury in his eyes became a glassy stare.

"Good Lord!" Doyle said hoarsely. "And to think that devil was in there the whole time. How'd you ever spot him, Dick?"

"Saw the door-handle move." Knight looked at Creele, lowered his voice. "Your hut door was barred on the outside—so there's only one way he could have got in here."

The stupefied look faded from Creele's eyes. He whirled toward the food locker.

But Knight caught his arm. "Don't open it! If there's anyone in the passage, he might blast us from the dark before we could see him. And those shots probably scared away anyone who might have been in there."

"Yes, but it means they've discovered the secret exit!" muttered Creele. "We'll have to escape while we've still time."

"Hold on," said Knight. "This man is not a Jap. He's Chinese. Search him, Doyle, and see if there's anything on him to give us a lead."

"Even if he is Chinese," grated the pseudo-monk, "he's undoubtedly working with the Japs. We'd better get over the border before it's too late. Even now—" he hesitated. "What's the matter?"

Doyle had stopped his hasty search, had jerked back one sleeve of the dead Oriental's coat.

"Look, Dick!" he whispered. "The sign of the Four Faces!"

Creele and Knight stared down at the arm of the corpse. Four faces had been tattooed so that they encircled the forearm. All four were identical. All four had the same expression of grim, brooding menace.

"So they're back of this," Knight said half to himself.

Creele looked at him with a blank expression. "I don't understand. What does that tattooing mean?"

"Then you've never heard of the Four Faces?" said Knight.

"The name strikes a vague memory," Creele answered. "But I can't recall—"

"It's the name of a huge criminal organization headed by four unknown men," Knight broke in tersely. "I've a strong suspicion that one of the four is Lowenstein, the rich Belgian who was supposed to have fallen from his private cabin-ship over the English Channel. And I've never been satisfied as to the stories of Stavisky's death or that of Kreuger, the Swedish match king. I believe these three and some other supposedly dead financier have built up the Four Faces in a quest for world pow-



er. We've tangled with them several times, and they've reason to hate us."

"You mean this organization also exists in America?" said Creele.

"All over the world," replied Knight. "Its members include men and women all the way from court circles down to the gutter. A great many are undoubtedly forced to serve the Four Faces by blackmail, or threat of death, though the original members seem to have been mainly from the underworld."

"But what could they want of me?" Creele demanded.

"Probably information you've picked up about Japan or the Soviet. Or they may intend to use you in some way. They have forced more than one foreign agent into their ranks, you know, and we've had proof they're interested in munitions and war supplies. I think they operate through dummy corporations headed by some of their members."

Doyle stood up, shook his head.

"Nothing on him but a little money and an extra clip for the gun."

"I didn't expect much," said Knight. "The 'killer' agents are seldom entrusted with important papers."

He glanced into the wardrobe cabinet, looked back at Creele, who was bending over the dead Oriental.

"Are all the members of the Four Faces tattooed like that?" muttered the false monk.

Knight gave him an odd smile.

"Suppose," he said softly, "you tell us."

### CHAPTER III

#### QUESTION IN RED

FOR a moment the only sound was the crackling of the fire on the hearth. The man in the Buddhist robe stared at him with a look of complete amazement, and Doyle stood open-mouthed.

"I don't understand," the pseudo-monk finally broke the silence.

Knight's eyes were on the other man's now-nervous hands.

"I wouldn't try anything," he said calmly. "Doyle, come around on the left side and search him. Watch out for those sleeves—I think he has a gun up in one of them."

"You mean he's a phony?" Doyle said incredulously.

"Knight, you're out of your mind!" rasped the robed pilot. "If I'd have wanted to kill you, I could have done it half an hour ago."

"It's no use," replied Knight. "I suspected you even before your friend tried to help you capture us. And one look in that wardrobe proves you're a liar. Those clothes were made for a man half your size."

Dark blood rushed into the other man's face, and his white scar stood out like a streak of lightning.

"Very clever!" he snarled. "But it will do you no good. You're trapped, and you may as well give in now."

Knight smiled grimly.

"At least we understand each other—and don't make any mistake about this gun. I've nothing to lose by shooting you."

A glare of fury came into the captive's eyes, but he stood motionless while Doyle yanked up his voluminous sleeves. A Russian-made Na-



garre revolver in a small holster hung upside-down on his left arm, with a flap to hold the gun in place.

"Nice set-up, Buddha," Doyle grunted. "Too bad you didn't have the nerve to reach for it."

"I think he's been ordered to take us alive," Knight interrupted. "Hurry up—the others may try to rush us at any minute."

Doyle ripped open the yellow robe, and a heavy flying-suit became visible. He jerked the zipper, carefully keeping to one side as he searched the prisoner's pockets in order that Knight's aim would not be blocked. The false monk's lips had set in an icy, mirthless smile, but his eyes narrowed when Doyle extracted a folded map from an inner pocket. Knight took the map in his left hand, spread it on the table as Doyle finished the search and stepped back with his pistol lifted.

It was a map of northern Asia showing eastern Siberia, Manchukuo, and the upper half of China. Well above the northern border of Manchukuo a large question mark had been drawn in red crayon. Knight turned the map over, but there was nothing on the other side.

"Any dope?" asked Doyle.

"Nothing here but a question mark," returned Knight.

The pseudo-monk gave him a sneering grin. "Shall I tell you the answer, my smart Mr. Q-Agent?"

Knight eyed him thoughtfully as he put the map inside his flying-coat.

"I wonder what you did with the real Mr. Creele. You didn't have much time to work here, or you'd have been more familiar with the food locker."

"Creele is dead," the other man said viciously. "And you'll be, too, if you don't agree to my terms."

"Which are—?" Knight queried.

"That you drop your guns and march upstairs with your hands in the air," came the reply.

"And after that, you take us to some headquarters of the Four Faces? That must mean more ships are coming here—at least one other two-seater."

Doyle looked uneasily toward the opened trap-door.

"We'd better get moving, then."

"You haven't a chance," grated the robed pilot. "There are a dozen men outside, all armed."

"Nice of you to warn us," said Knight. He motioned for Doyle to cover the prisoner carefully, then stepped to the food locker and silently began to clear the middle shelf. The false monk opened his mouth, shut it at a savage thrust from Doyle's gun. Knight stepped back, leveled his automatic, and squeezed the trigger.

The report roared through the confines of the basement, and a muffled howl instantly sounded on the other side of the cabinet. Knight had jumped aside the instant after he fired. A gun blasted, inside the passage, and wood splintered beside the hole his bullet had made. He fired again, low, and a screech of agony followed. At the same instant, a furious pounding sounded from up at the entrance to the hut.

"Pull back the locker!" Knight shouted at Doyle. "I'll cover him."

DOYLE leaped forward, but Knight stopped him with a hasty signal. Three shots crashed from the other side of the cabinet, and a crooked hole the size of a man's fist appeared in the back. A dim light shone on the other side, and Knight caught a flash of some one running into the passage.

"It's clear now!" he flung at Doyle. The ex-Marine sprang to the locker and tugged to pull it open. Knight backed toward the pressure-lamp, his eyes riveted on the tense face of their prisoner. The blows on the hut-door had redoubled in force.

"Tell them we've escaped by the tunnel!" Knight said fiercely.

The man's lips twitched into a snarl, but he did not speak. Knight's finger tightened on his gun trigger, and an ashen color spread over the prisoner's misshapen features.

"The passage—the Americans are escaping!" he cried out frantically.

Doyle swung the locker open on its hinges as he spoke, and a narrow passage was revealed. A young Japanese lay dying with a bullet through his stomach. There was no one else in sight, and the tunnel led straight ahead for a hundred feet or more.

"We'd better try the passage," Knight hastily told Doyle. "Go



ahead!" He gestured at the false monk with his gun. "You're next!"

Hands lifted, the prisoner started forward. He was half-way to the passage when the hut-door crashed open. A violent draft blew down into the basement and through the tunnel. The lamp flickered wildly, almost went out. In the sudden gloom, the captive made a frenzied dive for the dead assassin's weapon. Knight fired, missed in the crazily flickering light. Before he could aim again, a gun blazed from the top of the steps. He whirled, pumped a shot toward the trap-door, then sprang backward into the passage.

The pseudo-monk had snatched the dead Oriental's pistol, rolled to one side. Knight jerked the cabinet half-shut, dashed into the tunnel. Doyle was crouching a few yards away, trying to aim through the crevice. He jumped up, and they raced for the turn in the passage. Light abruptly streamed from the basement. Knight whirled, triggered two shots. A smallish figure tumbled to the ground, and at the second shot the gasoline lamp went out.

"Slade!" a voice cried shrilly. "Don't shoot—it might start a fire!"

"Get above and cover that exit, you fool!" came the furious response of the scarred pilot. "I'll take care of this end!"

Knight bumped against Doyle, held onto the other man's arm as they hurried into the dark passage.

"I knew he was lying—we'll have only one or two men to contend with."

"Why not duck back through the hut?" Doyle said hoarsely.

"I think our friend's going to block that way," muttered Knight. "And it can't be far to the exit."

They had passed the bend in the passage and were starting up an incline when a dull roar sounded behind them and the red glare of flames showed dimly around the curve. Doyle swore.

"The dirty rat! Now we've got to get out this way."

"Look out!" whispered Knight. "There's the end."

A wooden trap similar to the one in the hut had been left open, and by the faint glow reflected around the bend in the tunnel he could see trees and falling snow. He jerked off his helmet, raised it on the muzzle of his gun. A shot roared, and he saw a spurt of flame by a tree at the right. The flame disclosed a fur-clad figure, and Doyle instantly fired. The man dropped his gun, slid to his knees without a sound and lay with his face buried in the snow.

"Good shot," said Knight. Then he jumped up and helped Doyle onto the level ground. A flashlight was probing back and forth, two hundred feet

away, as some one fled through the trees toward the clearing. The two agents followed as fast as they could, tripping now and then over tangled brush or rocks frozen into the ground. They were within a short distance of the field when one side of the hut blazed up. The fire in the basement had quickly reached the upper floor.

Two men in fur parkas were dashing toward their Northrop. Knight took careful aim, eased the trigger back. His gun jetted flame, and one of the men stumbled. The other wheeled, flung two shots into the woods. A bullet chipped bark from



a tree beside Knight. He fired again, and the other man ran desperately for the 2KB-19.

"It's Slade!" fumed Doyle.

"We've got to stop him!" rapped Knight. "He'll strafe us if he gets off!"

**T**HEY charged for the clearing. Slade scrambled into the cockpit of the fighter, and the starter whined. The motor caught almost instantly. Both Knight and Doyle blasted shots at the unblocked ship as it lurched forward, but the pilot rammed open the throttle and was swiftly out of range.

"Come on!" Knight said tautly. They ran to the Northrop, and in another moment he was fumbling for the key to the locked circuit. He switched on the twin-radial, pressed the inertia starter button. To his consternation, nothing happened.

"They've cut the starter wires!" he shouted at Doyle. "See if you can swing the prop!"

Doyle tumbled out, raced to the nose of the ship. He was about to pull the prop when the Soviet fighter came thundering down the field. Knight whirled in his seat. The 2KB was fifteen feet off the ground. Just as he turned, the left wing dropped slightly and the nose of the fighter swerved toward the Northrop. Knight hit the release-gear at the back of his seat, clutched the spade-grip of the rear-pit .50's.

As two crimson eyes blinked on the cowl of the Soviet ship, the Q-agent tripped his heavy guns, and tracers interlaced with the fuzzy lines sprang toward the 2KB. Slade hauled back into a tight chandelle, and Knight's tracers drilled into space.

"Switch on!" bellowed Doyle.

"Hurry up before that devil tries it again."

"Switch on!" shouted Knight. Doyle lunged at the prop. The engine coughed, died. Before he could swing again, the 2KB came shrieking down in a power dive. Again, Knight whirled to the .50's. Slade's tracers were stabbing into the snow-covered ground three hundred feet away. Frantically, the American jerked the double trigger. The guns tilted swiftly, blasted straight into the right wingtip of the fighter. The 2KB flipped off and dropped on the left wing, and the streaking tracer-lines Slade had poured out missed the Northrop by a scant ten feet.

Knight let up on the trigger, thinking the fighter was doomed. But with an amazing turn Slade recovered and zoomed above the trees. Doyle jerked the prop as Knight spun around to the controls, and this time the engine caught with a welcome roar. The hut was now a mass of fire, and Knight cast an anxious look into the lighted sky while Doyle climbed into his seat.

"Where'd he go?" demanded the stocky ex-Marine.

"I think I crippled him," Knight yelled back over his shoulder. He opened the throttle half-way, sent the Northrop trundling down-wind.

The ship had almost gone far enough for a turn into the wind when Slade's fighter came diving over the burning hut. The smoke and flames had concealed its approach until the last moment.

Doyle whirled his turret, and Knight braked the two-seater into a hasty turn. The 2KB's guns blazed briefly, then the false monk chandelled, wings screaming. As the fighter lifted skyward, Knight could clearly see Slade's head and shoulders by the glare from below. He was wearing a headset, and with one hand he held a microphone close to his lips. Knight snapped on his receiver, twirled the dial. Strange words crackled into his ears, then he suddenly recognized them as Esperanto, the adopted language of the mysterious Four Faces.

He shoved the throttle open to the take-off limit, trying to catch a few words of the comparatively unfamiliar language. A startled cry from Doyle broke in.

"Dick! Look up to the north!"

**R**ICHARD KNIGHT flicked a glance up through the snowy sky. Icy fingers seemed to pull at his scalp. For the second time that night, something was streaking earthward at terrific speed.

There was a blinding flash, a roar that cut through the radial's thunder as though it had been a whisper.



Shattered trees and fragments of frozen earth went hurtling into the air a mile beyond the edge of the clearing. The blasted debris was instantly followed by a gigantic mushroom of dazzling white flame, and Knight felt the earth shake from the force of another explosion.

The Northrop was half-way down the field, wheels almost clear, when a second blurred streak showed nearer and to the south of the field. So fast his eyes could not follow, a bright spot in front of the blur plunged to earth and another explosion shook both earth and sky. Scorching heat swept out after the two-seater. He rammed the throttle wide-open, gasped for breath as the blazing white mushroom sent its huge tendrils snaking after the ship.

For a second he thought they were lost. The Northrop awayed, dropped almost to the ground in the buffeted air. Then the churning prop took hold again, and the ship slowly lifted into the cooler air beyond the clearing. He dragged the half-closed Plexiglas dome farther open, sucked in the cold air until his giddiness had gone. Doyle was wiping perspiration from his face, his eyes wildly dilated.

"That's twice that dirty louse has tried to burn us up!" he bawled into Knight's ear. "But what in hell are those things—and where do they come from?"

Knight made no answer. He was climbing steeply from the clearing, his eyes straining to see through the snow. Fear gripped at his heart as a third whitish blur became visible high up in the night. The blur became a streak—and again a weird flame spouted up into a giant geyser.

## CHAPTER IV

### ABOVE THE BORDER

THE Northrop rocked in the fierce upblast, but Knight fought it safely away from the boiling currents of air. As the ship settled into level flight two miles beyond the clearing, he stared back. Four more of the strange white flame-masses had appeared, making a total of seven which roughly encircled the field. As he watched, an eighth struck almost in the center of the clearing, and the weird white fire spread out in all directions, hiding the already blazing hut and setting trees afire on both sides. The terrific heat had melted the falling snow while it was several hundred feet from the ground, and Knight could see distinctly into this oddly-cleared space.

Something flitted into view at one side, and in a moment he recognized the 2KB as Slade warily circled the

stricken area at a height of six hundred feet. The Russian ship swayed and tossed in the unsteady air, but the Four Faces pilot held to his dangerous altitude while he continued to fly about.

"He must be looking for us," Doyle shouted from the rear cockpit. "Let's get him!"

"No, I want to see which way he heads," replied Knight. He closed the Plexiglas, switched on the ventilating unit. "Keep your eye on him while I climb a bit higher—I want to make sure he doesn't spot us."

The Northrop spiraled up to two thousand feet, then Doyle gave an exclamation.

"He's swinging north. And is he letting that crate out!"

Knight peered through the arc cleared by his windshield defroster and saw the 2KB settle on a course of 23 degrees. He followed, nosing down slightly so that he could not lose sight of the fighter as it raced away from the lighted zone. After a minute, the 2KB made a sharp turn, circled as though Slade were making sure he was not being trailed. Knight pulled up until he could barely see the other ship, and in a few moments the fighter resumed its former course.

Engine half-throttled, Knight sent the Northrop down in a power glide, holding back until the swiftly increasing gloom all but hid his quarry. He knew then that Slade was not likely to glimpse the Northrop, even if he were not already certain that they had perished. Carefully, he edged in, keeping a trifle under the other ship until he could dimly see the flash of its exhaust. The Northrop's



stacks were shielded, and he had no fear that Slade would see the two-seater.

"How far we going to chase that rat?" demanded Doyle. "We haven't got any too much gas."

"We've more than enough to get over the border to Blagoveshchensk," returned Knight. "And that town's not so far off the course he's taking. If luck's with us, we may be able to locate the Four Faces base before we cross the border."

"Then you think it's in Manchukuo?" grunted Doyle.

"It would almost have to be," said Knight. "You could hardly build a gun big enough to fire those shells

from the nearest point in Siberia."

"It's got me stumped," grumbled Doyle. "What are they up to, anyway? And why did we get dragged into it?"

"Your guess is as good as mine." Knight's eyes were fixed on the faint glow of the 2KB's exhaust stacks, as the fighter hurtled on through the darkness. "Here, take this map and turn your light on it—cover it so it won't shine up through the top. See if we're going toward that place covered by the question mark."

Doyle took the map, was silent for a minute.

"Hey!" he said suddenly. "We're heading straight for the dot under the question mark. It's about a hundred and fifty miles east of Blago—whatever-you-call-it, close to a river."

"So that's it," muttered Knight. "The dot's the location of the base, and Slade put the question mark there to keep anybody from guessing, if he happened to lose the map."

"You're doing a lot of guessing right now yourself," growled Doyle. "If you ask me, we're in a bad enough spot without looking for more trouble. Maybe you think the Reds are going to give us the glad hand?"

"They won't start a row as long as we're not working against them. And I've an idea they'd like to hear about Slade's using a Soviet ship, and those other 2KB's."

"I wonder who he is," said Doyle. "He sure fooled me."

Knight answered without taking his eyes from the 2KB.

"There was a pilot named Brant Slade who did a lot of liquor smuggling by plane during prohibition. After repeal, he switched to running aliens and then suddenly disappeared. He'd made a lot of money—and a lot of enemies—so the Coast Guard supposed he'd been killed. I saw a picture of him some years ago. It didn't look like this man, except that he was about the same height. However, that doesn't prove anything, for glandular disorders could have distorted his features in that way in the meantime. One link between him and Asia is that he smuggled in a number of Chinese."

"He sounds like the kind of bird the Four Faces would get hold of," said Doyle. "But I can't figure how they've managed to build a hide-out in Manchukuo without the Japs finding it out."

"They'd have Japs on their roster, for one thing," said Knight. "But it does seem peculiar—" he stopped, eased the throttle back a fraction of an inch. The snow was getting lighter, and he could see the 2KB more plainly.

In a few minutes more the air was clear, and he was forced to drop still



farther back; for now several breaks in the clouds began to appear, and occasionally shafts of moonlight shone through.

"He's climbing!" exclaimed Doyle. "We must not be near the base at all."

**K**NIIGHT frowned, held the Northrop to a parallel ascent. After an interval, he switched on the radio, tried each special range. But there was no sound. He dared not use the transmitter for fear Slade would hear and discover a ship was close to him. The 2KB leveled out at about ten thousand feet, and for another twenty minutes held its course. A pinpoint of light flickered from the darkness ahead, then a searchlight swung up the sky. Almost at once, two more beams came to life; then far below Knight saw A-A batteries blaze. A shell burst well off to his right. Another flamed ahead and to the left, and before he had time to swerve, the 2KB made a sharp turn to avoid the barrage.

Slade chandelied his fighter wildly when he saw the Northrop. Knight dived under him, then zoomed. Slade's guns blazed for a moment, then with engine wide open he climbed above the bursting shells, twisting and turning rapidly. Knight took a hasty glance downward.

"We're over the border! That strip between the batteries is the River Amur."

"Then both sides are popping at us!" howled Doyle. "This is a sweet mess."

A shell from a Soviet gun exploded two hundred feet underneath the Northrop, and bits of shrapnel thudded against the wings. Knight saw a small hole appear near the right wingtip. He shoved the throttle full open, and the two-seater thundered up into the gloom. A searchlight beam flashed past, pawed futilely at the heavens. The guns fired sporadically, then abruptly ceased. Knight shot a look at the altimeter, saw they were close to eighteen thousand feet. He stared around, but there was no sign of Slade's ship.

"Well, what now?" barked Doyle.

Knight glanced at the fuel gauges, made a brief estimate.

"We've enough gas to find out what that dot means and still get to Blagoveshchensk. What do you say?"

"I say we're nuts—but go ahead."

"Seal your end of the pit," said Knight. "We'll come in high, so there'll be no chance of Slade's dropping on us."

He likewise locked his own gear, turned the compressor valves so that supercharged air would be delivered to their cockpit as well as to the engine. He climbed the Northrop to

25,000 feet, and the plane dropped on under the pallid moon, with only blackness beneath. The red dot, according to Doyle's measurement, was ninety-eight miles from the border. The strato-ship, cruising at only one-half its top speed in thin air, covered the distance in just sixteen minutes.

Knight's eyes were on the clock, and as he counted off the required time he idled the motor and started down in a slow spiral. Far below, a faintly grayish ribbon showed under the moonlight between two drifting clouds. He took out his field-glass, made a quick inspection.

"There's the river by the dot on the map, but I can't see anything else," he said as he replaced the glass.

"And I'll bet we don't find anything when we get down there," growled Doyle. "Of all the screwy—"

He stopped, and Knight sat up alertly—for the radio amplifier was blaring out a string of words.

"Esperanto again!" Doyle exclaimed. "Can you make it out?"

"No, but the station must be close to be that loud. See if you can get a bearing on the direction-finder."

Doyle turned to adjust the dial.

"Holy smoke!" he burst out. "It's movin' all over the place as though—Good Lord, Dick! Look!"

Knight whirled, went rigid. Something dark had flitted across the face of the moon so swiftly that it was gone before he could even guess at its shape. As he stared upward, a fiery streak appeared and vanished. Then the dark shape hurtled down at the Northrop!

**A**T the speed of a meteor, the thing plunged down the moonlit sky. Knight had a blurred glimpse of short, thick wings. Streams of smoke eddied furiously from the rear ends of two strange-looking cones mounted on them. But there was no



trace of propellers. The terrific speed of the mystery ship made a chill run up his spine.

Doyle was frantically trying to bring his .50's to bear on the diving craft, but before he could fire the other plane twisted aside. Knight tripped his wing-root guns, but the tracers went into empty air.

Wings screeching, the mystery plane skidded in toward the Northrop. Knight desperately kicked away. The other ship whirled in a vertical

turn. There was a roar, and two blasts of white flame shot from the rear ends of the two huge cones. A scorching heat swept through the double Plexiglas enclosure into the Northrop's cockpit, and Knight sagged over the controls, gasping for breath. Dimly, he felt the ship whip into a spin, go twisting earthward with its motor still on. With an effort, he forced back the dark curtain which had almost descended over his senses. The ship had spun down three thousand feet. He closed the throttle, neutralized the controls, and brought the nose up. Doyle was dazedly clawing at the enclosure locking-gear. It slipped open, and cold air howled into the cockpit.

Knight looked around hastily, felt his heart constrict as the sinister black raider again pitched down at them. His icy fingers slid over the stick-buttons, and then with a violent zoom he jerked the nose of the Northrop up at the other ship. The guns pounded viciously, but in the same instant two winking red spots appeared in the rounded nose of the raider. The spots grew at tremendous speed until it seemed the mystery ship would crash head-on into the Northrop with its guns still spouting. A trail of bullet-holes suddenly ran across the Plexiglas, sent tiny bits of dural spattering down into the cockpit. Then with a deafening shriek the black raider plunged by.

Knight kicked off as the Northrop started to stall. Five thousand feet below, two blinding white flames streaked the sky, and he saw the sky monster come racing upward again. Doyle was hanging in his gun-harness, gaping downward.

"Get back into your seat!" Knight flung at him. "Snap your belt! I'm going to try to out-dive them!"

"What the devil is it?" Doyle said hoarsely.

"Rocket-ship—jet-propulsion!" Knight rapped back. He waited, crouching over the stick until the black raider was two thousand feet below and zooming at a mad speed. Then he jammed the stick to the firewall. The Northrop stood on its nose, went down with the radial bellowing. The rocket ship seemed to cartwheel in a split-second. With flames fifty feet long jetting from its nozzles, it came down after the diving two-seater. Doyle twisted around in his seat, pumped a wild burst from the .50's. The rocket-ship leaped sideways two hundred feet, flung its tail toward the Northrop. Knight stood on the rudder, and the strato-ship lurched in the opposite direction. The streams of blazing gas flamed above them, and their force hurled the raider a mile across the sky before it could turn back.



Heart pounding, Knight watched the altimeter hand. The ship was already down to 16,000 feet and he knew the meter was lagging. Directly over the nose he saw lights flicker on the ground, making a rectangular pattern like tiny gems against black velvet. He threw a fearful glance over his shoulder. The rocket-ship was boring down at an angle from the point where it had reversed its course. But in another moment he knew that the pilot had momentarily lost sight of the Northrop, for the rocket-jets blazed and the black raider zoomed steeply.

He closed the throttle, started to pull out of the dive as the altimeter showed 10,000. The nose had barely begun to lift when an amber-colored beam probed up and caught the ship. Knight put one hand before his eyes, bent to watch the instruments as he pulled out. The Northrop was almost at its terminal velocity of 460. It would be only a matter of seconds to a crash unless he leveled out.

Above the frightful scream of the wings he faintly heard the clatter of Doyle's guns. Scant seconds from death, his chunky partner was trying to take the black raider with them. Brilliant flame lit up the sky and the rocket-ship for the third time skidded crazily past, its blazing jets pointed toward the Northrop. This time Knight thought they were finished, but as swiftly as the jets had whirled toward them they were twitched away. The amber searchlight was flashing wildly at the black raider, and from the corner of his eye Knight saw another ship racing in.

With both hands on the stick, he lifted the two-seater's nose. The ship was almost level, fifteen hundred feet above the ground, when a hail of lead crashed through the left side of the enclosure. He jerked to the other side, saw a stream of tracer cut diagonally forward into the cowl.

The twin-radial skipped a beat, broke into a ragged rhythm. Knight swore, glared back and saw a 2KB swooping in for another burst. It was Slade's ship.

"Get that louse, Dick!" he heard Doyle groan. "My guns are empty."

Knight grimly shook his head. The tachometer hand was steadily dropping, and they were practically helpless before the darting fighter. He kicked into a slip, straightened out as Slade sent a brief fusillade past his wingtip. The rocket-ship was swooping down toward the lighted rectangle, its jet-nozzles trailing plumes of white smoke.

**T**WO floodlights spread bright fans on the ground, and Knight saw that the rectangle was the only

open space in a vast expanse of woods save for the frozen river which lay close by. For an instant, he thought the river might offer a chance at escape, then he saw that the ice was too rough for a landing.

With a heart like lead, he turned the Northrop and glided down toward the lighted ground. Slade followed, expertly shifting from right to left to ward off any attempt at escape, evidently not sure that the engine was really crippled. Knight stared gloomily over the cowl, saw hangars, barracks, and shops, dark bulks in the light from the flood-



units. Men in fur parkas had swarmed out from the barracks, were rolling the rocket ship toward a platform at the base of a launching track. A car with cog-wheel drive stood on the platform waiting to receive the rocket-ship, and in front of it at the point where the rails began to tilt upward was a smaller car on which was secured a glistening rocket-shell some twenty feet long and three feet in diameter. The track extended upward at an angle of thirty degrees, being elevated from the ground by a huge trestle-work. Knight could vaguely make out a complicated braking apparatus near the end of the rails, three hundred feet from the platform. At least fifty of the sinister-looking rocket-shells lay in wheeled cradles on both sides of the platform. One was hooked to a derrick-boom, ready to be hoisted onto the launching-car.

Knight saw all this in a quick glance as he swung into the wind and leveled off. A dozen armed men ran toward the ship as it stopped, and in a few moments he and Doyle stood outside, hands lifted in the bitter cold air. The 2KB moaned down and landed nearby. Slade jumped out, his yellow robe flapping and strode over to the prisoners. The guards, Koreans except for one dour-faced Russian, apprehensively watched the approach of the false monk. An ugly smile twisted Slade's misshapen features as he came up to Knight, goggles pushed up on his forehead.

"You're a hard man to kill—but I think I can change that," he said sardonically.

Knight made no answer, whereupon Slade turned abruptly to a fur-clad man who had emerged from the cabin of the rocket-ship. The man was thickset as a gorilla, with a red, brutal face, and a drooping eyelid which lent him a look of sly cunning.

"Gunderson," rasped the robed pilot, "I told you not to use the jets on them except as a last resort."

"I suppose I should've let them shoot us down," said Gunderson sullenly. "Maybe you think it's simple to fly that damned ship—"

"I've told you a dozen times to cut off the jets while you're ten miles from your target," Slade retorted angrily. "You can get in line, fire, and—"

"—And crack into 'em head-on!" broke in Gunderson sarcastically. "I tell you she's too fast for combat with an ordinary ship, even at one-third power. Anyway, you've got these two alive, if that's what you wanted."

"Not what I wanted," Slade said malevolently. "It was an order from Them. I think some special hell has been cooked up for these countrymen of ours."

## CHAPTER V

### DECREE OF THE FOUR FACES

**G**UNDERSON shivered as he heard Slade's words. "I'd bump myself off, if I ever thought *They* were after me."

"Well, I'll see that our 'friends' here don't have that chance," said Slade. Then he spoke briefly to the dour Russian, and the man turned to his squad of Koreans. Knight and Doyle were marched to the entrance of a thick-walled building between the main barracks and a hangar. Above the door, Knight saw a panel bearing Russian lettering. Translated it read: *Headquarters, U.S.S.R. Emergency Squadron 99.*

They entered a hall, turned, and stopped inside a large room at the opposite end of which was a ground-glass television screen six feet high and eight feet wide. Powerful Kleig lights made the entire room blindingly bright. Two men sat at a complicated switchboard on the left side of the screen.

Slade and Gunderson followed the prisoners into the room, and the pseudo-monk dismissed all but the Russian and two of the guards. Knight and Doyle were quickly searched, and their guns taken. Slade nodded to one of the men at the switchboard, and stepped before the television screen.

"Number Thirteen reporting," he said, and his voice held a slightly uneasy note. "Knight and Doyle have been captured and are here at Base E. The stratosphere plane has also been captured, with only slight damage which is being repaired immediately."

There was a pause, then a faint humming sound. It died away, and an



indistinct picture grew upon the screen. Knight stiffened as he saw four black-robed figures seated behind a high bar like a judges' bench. The picture grew clearer, and in a moment four grim faces looked out from the screen. All were identical, all had the same sunken eyes, rigid features, the same expressions of brooding menace. Though he knew the faces were masks to conceal the identity of the mysterious men who headed the criminal league, he felt the old, shuddering fear as he looked upon them. Doyle and he had stood in judgment in front of the Four Faces before, and only miracles had saved them. He knew they could expect no mercy now.

The first of the Four Faces leaned forward, and his voice sounded from the speaker behind the screen. It was so devoid of emotion as to be almost toneless, as though some mechanical man spoke:

*Report in full detail, covering all steps since the last report period.*

Knight stole a sidelong glance at Doyle. The ex-Marine was staring at the screen, perspiration running down his face. Gunderson and the guards were also watching with varying expressions of fear and uneasiness. Slade cleared his throat, spoke hurriedly.

"I took over the impersonation of Creele, as ordered. While I was in the air, spotting the hits of the first rockets, the Northrop appeared and was attacked by Japanese pilots."

HE described what had followed. The four masked figures looked at each other, conferred in whispers that the television speaker did not make intelligible. Then the First Face nodded.

*Number Thirteen, the attack on Harbin will be temporarily discontinued. Our reports indicate it has been successful, that the Manchukuan authorities believe the Soviet responsible. Tokyo has been informed. You will now carry out the second phase of our plan. Take down these orders.*

Slade jerked his head at one of the switchboard men, and the First Face went on impassively.

*Have the rocket-plane fueled for a flight to Tsingtao, China. There will be a ten minute interval for directing rocket fire, and then a return flight to Base E. On signal from the pilot of the rocket-ship that it is in position to direct your fire, you will launch three trial rockets to fall approximately ten miles north, south, and west of Tsingtao. As soon as corrections are received, you will then set the gyro-controls to drop twenty rockets in rapid succession in the harbor and in the area including the Edgewater Mansions House, where three hun-*

*dred Americans are now assembled. The United States cruisers "Marblehead" and "Sacramento," and the destroyer "Pope" are in the harbor, to protect or evacuate the Americans. All Japanese mills and property are being burned by Chinese communists, and Japanese naval vessels are en route for reprisal attacks. The rockets will undoubtedly be thought to be shells from Japanese battleships out in the Yellow Sea, and the destruction of the American colony and the three American warships will be cer-*



*tain to embrace the United States in a war with Japan, for America is already inflamed over the "Panay" incident.*

"I have the orders," Slade said tensely as the First Face ceased. "But what of the prisoners?"

The First Face spoke again:

*Their death has been decreed. But we intend to make use of them at the same time. A document is being prepared here which will be shown you by television in a few minutes. It will purport to be a code message from the American G-2 chief, General Brett, to Creele at his Manchukuo hiding-place, explaining certain secret plans for a sudden offensive by England and the United States against Japan. It will seem to instruct Creele to send the information to spies in Manchukuo, and across the border to the Soviet officials, who will also cooperate in the attack. It will name Knight as the senior secret agent of the United States, with authority from the White House. Have a photograph made of the document and then a handwritten copy made. This paper is to be found on Knight's body after he and Doyle are left in the Northrop.*

"I don't understand," Slade broke in. Thereupon the voice of the First Face became even more cold:

*Don't interrupt. I will explain everything. The Northrop is to be flown back to Manchukuo and landed at the field to the northeast of Harbin. One of the prisoners will be taken in the rear seat, drugged. The other also drugged will be taken across the border in one of your three-seater planes. Your pilots will return in the three-seater, leaving Knight and Doyle unconscious in the Northrop. As soon as your men are safely away, they will signal you, and you will relay the message to us. We shall ar-*

*range for one of our Japanese members to 'discover' the Northrop soon afterward. The prisoners will have frozen to death, and it will look as though they had lost their way and been forced down. The forged paper will give the Japanese evidence that they are about to be attacked by three powers—and the war we desire will be inevitable.*

Doyle gave a strangled curse, and Knight looked grimly at the Four Faces.

"It's a smart scheme—but it won't work," he said in a savage tone. "Neither Japan nor the United States wants that war."

A sound like a dry chuckle came from the television speaker.

*What they desire is not important, Mr. Knight. We have decided for them.*

The pictures faded from the screen, and Slade glowered at the two prisoners.

"Too easy a death," he said harshly. "If I had my way—" he broke off, his scarred face suddenly mocking. "Maybe I will, at that. Vornoff, lock them up with the Englishman—or did the fool die while I was away?"

THE dour Russian shook his head, grunted a command at the guards. Knight and Doyle were taken down the hall to a door which Vornoff unlocked. There was no light inside, but by the glow from the light in the hall Knight saw a man in a blood-stained yellow robe lying on the floor. There was a cut at one side of his shaven head, and his face was livid with bruises. The prisoner tried to raise his head as the two Americans were shoved into the cell. The door slammed shut, and Knight heard the man groan.

"Creele?" he said.

"Don't beat me again!" the other man cried hoarsely. "Let me die—I tell you I don't know anything else."

"We're not going to hurt you," Knight said gently. "We're prisoners."

"Prisoners?" Creele mumbled. His voice came out of the blackness, shakily. "Not—the two Americans?"

"Yes," said Knight. "Then you got the message from General Brett?"

"If you're lying, it won't do any good—I've told everything, I told you the message—"

"We're not Slade's men," Knight cut in. "We came up from Shanghai to get instructions from you, but Slade was impersonating you."

"I know—I heard them plan the whole thing," Creele muttered. "They intercepted your general's messages and then landed at my place. I thought they were Soviet pilots—I'd worked with Russia before. They almost killed me—I think they would



have, but they thought I had some information I was holding back. One of Slade's pilots brought me over here in his ship—I've been in here at least six hours."

"What was Brett's message for us?" Doyle interrupted.

"It was about the rocket affair," Creele answered dully. "They had just discovered the secret plans were stolen at Guam."

"What plans?" said Knight.

"The design for the rocket-ship, I thought you knew about it—some American scientist named Chambers has apparently been working secretly at Guam for the last year."

"Chambers—the rocket designer!" exclaimed Knight. "But he was reported killed in an experiment in 1936."

"It must have been to cover up his work," Creele mumbled. "The messages didn't explain in full, but it seems that Chambers had built a rocket using hydrogen and ozone under high pressure. He was shooting test rockets out into the Pacific, with the Navy checking distances and speeds. And evidently he designed a full-sized rocket ship and was building it at his Guam station. The Four Faces learned about it and stole a copy of the plans and a rocket model, but Chambers didn't find out until two days ago when an assistant confessed he'd been blackmailed into doing it. I suppose you know about the Four Faces—your general mentioned them as though you'd understand."

"We've tangled with them—plenty," Doyle growled.

"I'd heard of the organization but never believed all the stories. They must have spies everywhere, even in the highest branches of a dozen governments. This base here," Creele went on wearily, "was built for emergency use by the Soviet in connection with the new defense plan for Siberia. Some one ordered it abandoned five months ago, and I know now that the Four Faces were back of that order. They've had men here since early Fall, building that launching-track and assembling the rockets from materials brought in by the river before it froze over. Vernoff bragged about it—I knew him at Vladivostok, the lying renegade."

"So that's how they got hold of the Soviet ships," Knight commented. "He's been playing a double role."

"That's right. He must have suspected me long ago, and had some one watch me at Harbin, or they'd never have known where to land today. Or maybe it was yesterday. . . . I don't know what time it is. . . . not that it matters. . . ." his voice trailed off, hopelessly.

"We've still a chance," said Knight, though he knew there was practical-

ly none. "Tell me the rest of Brett's message—we may be able to work out something."

"I'll tell you—but it's no use. I was to help you reach the right Soviet officials at Khabarovsk, so you could have aid in finding where the Four Faces had built their rocket base. Chambers' assistant knew that they intended to work from somewhere east of Blagoveshchensk, with the idea of starting a world war. I don't know what side they're on—"

"The Four Faces are on nobody's side but their own," Knight said grimly. "They own munitions industries in several countries and probably stand to make a colossal fortune if another world war develops."

"And there'll be one if those rockets hit our ships and the American crowd at Tsingtao," Doyle said fiercely from the darkness. "But we won't know about it—we'll be feeding vultures down in Manchukuo."

"The rockets may not hit their mark," Creele said in a dull voice. "It's a long distance from here to Tsingtao."

"They've already arranged for that," said Knight moodily. "They're sending the rocket-ship ahead to spot the hits and radio back the corrections. If we could only have destroyed that ship!"

"I still don't see how the rockets carry so much explosive," said Doyle. "It must take a helluva lot of hydrogen and ozone to feed th' jets over a thousand miles—and it's all of that from here to Tsingtao."

"They don't carry explosive," Creele answered listlessly. "They simply arrange to detonate the remainder of their fuel on impact—hydrogen and oxygen is about as powerful a mixture as you can create, and ozone doubles the oxygen content. I heard the man called Gunderson tell some one the rockets would reach a



trajectory peak of sixty-three miles on the way to Harbin, so they must go most of the way in empty space. That means they'd coast at least half the way, with the jets shut off after the rockets gained their momentum. They must reach a speed of 1500 miles an hour once they get above the stratosphere."

"Even more," said Knight. "The rockets began to strike near your hut within five minutes after Slade reached his ship. He couldn't have signaled for them any sooner."

"Well, it makes no difference now,"

Creele answered. Knight caught the labored note in his voice. "We're finished, and we might as well admit it. But I'd die happy if I had just one shot at that devil Slade."

"So would I!" Doyle grated.

## CHAPTER VI

### HELL'S HOLOCAUST

"THERE must be some way we could trick them," Knight muttered. "I wonder what Slade meant when he said he might have his way about killing us?"

Neither Doyle nor Creele had an answer. Then from out on the base the thunder of an engine suddenly was audible.

"That's our ship!" Doyle exclaimed. "They must've fixed it in a hurry."

"It was only a clipped distributor wire," said Knight. He listened while the engine ran for a minute. It stopped, and again silence fell in the darkened cell. Creele's heavy breathing was the only sound for almost ten minutes, then Knight snapped his fingers.

"What's the matter?" Doyle said hastily.

"It may not work, but I've an idea," Knight whispered. "At the worst, it's better than freezing to death, half-drugged. Creele, I'll take your robe and pretend to be you. They won't be expecting any attack from your direction when they come in here. If there aren't too many I might be able to seize a gun and cover them."

"It's probably your death-warrant," Creele said huskily, "but we might as well go out fighting. Here—help me get out of the robe."

Knight stooped over him in the dark, felt the Englishman's hand grope for his. Creele's flesh was feverishly hot and his hand shook.

"Don't try to get up," Knight said in an undertone. "I'll get out of this flying-coat and help you put it on. You'll have to wear the helmet and goggles, too, if we're to fool them even for a moment."

The exchange took a minute or two, and when Knight had donned the robe he felt along it until his fingers touched the bloody stain he had seen. He rubbed his fingers along the side of his head where Creele had been wounded. He was just starting to give Doyle whispered instructions when footsteps sounded outside and he heard Slade's voice.

"Have the crew ready for launching the ship. I'll be there as soon as I take care of the prisoners."

"You mean you're going to pilot it yourself?" came Gunderson's voice.

"I am," snapped Slade. "I've a spe-



cial grudge against the Navy ever since they helped the Coast Guard put me out of business. I wouldn't miss this show for five grand."

Knight had bent over Creele at the first sound. He lifted the wounded man in his arms, carried him across the darkened cell. He started to put him down, but Creele gripped his arm with trembling fingers.

"No, no! Put me on my feet . . . Doyle can help me stand . . . best way to pretend I'm . . . you."

"He's right, Dick!" Doyle said in a hoarse whisper. "Here—lean on me—"

Knight sprang across the room, flung himself down where Creele had been as he heard the key grate in the lock.

"—and have the Northrop started, too," Slade's voice came, close to the door. "Our friends will be ready for their little joy-hop in five minutes."

The door swung open. Knight lay doubled up, one arm partly over his face, legs drawn up as far as possible under the yellow robe so that the difference in his height and Creele's would not be apparent. Light slanted in through the doorway, and staring under his arm he saw Slade come in, followed by Vornoff and two Koreans. A flashlight beam passed quickly over him, flipped toward the other prisoners.

Like a catapult, Knight's tense muscles shot him to his feet. The nearest Korean whirled with a startled yell. Knight's fist smacked viciously under his jaw, and the man went up on his toes. Knight wrenched a gun from the guard's resistless fingers just as Vornoff spun around. Fear shot into the Russian's eyes, and he frantically snatched at his pistol. Knight leaped in desperately, clubbed his gun into Vornoff's face. The Russian tottered back, blood pouring from a gash on his brow.

A half-muffled shot echoed through the cell. Creele gave a gasping cry, crumpled to the floor. Doyle crashed a left hook to Slade's jaw, knocked a smoking automatic from the killer's hand. The second Korean carried a bottle and a hypodermic syringe instead of a weapon. For a moment, as the fight raged about him, he cringed back against the wall, then suddenly he hurtled at Doyle, the syringe needle pointed at Doyle's neck.

**K**NIGHT sprang over the other guard, brought the butt of his gun down on the brown man's head. The Korean collapsed without a sound, and the bottle broke upon the floor. Vornoff was staggering around blindly, eyes half-filled with blood. He tripped over the second Korean, fell headlong. Knight wheeled to help Doyle, but his aid was not needed.

His chunky comrade had the bigger man by the throat, and Slade was clawing wildly to break that deadly grip on his windpipe.

"Don't kill him!" Knight said swiftly. "We'll need him."

He scooped up Slade's gun, ran to the door and looked out. There was no one in sight. Evidently everyone else was out on the base preparing the two ships and the rockets. A horrible, choking sound made him whirl. For a second he thought Doyle had disregarded his orders, then he saw Vornoff writhing on the floor. Some of the liquid from the broken bottle had reached the Russian's gashed forehead. A terrible glare came into Vornoff's dilated eyes. His lips flew open as though for a scream of agony, but it never came. One last tortured gasp burst from the traitor's throat, and his face froze into a red-stained mask of horror.

Knight looked grimly from the dead Russian to Slade, who had sagged to his knees, breathing stertorously. He handed Doyle Slade's gun, stooped and picked up the hypodermic needle. Slade's eyes bulged as Knight came toward him.

"No! No!" he croaked. "Not that!" Doyle savagely hauled him to his feet.

"You dirty rat! I'd like to empty this gat right into your yellow belly!"

Slade cowered back, his misshapen face ashen. Knight looked down at Creele's body. Perhaps it was only imagination, but there seemed to be a faint, sad smile on the dead man's lips.

"He threw himself against Slade's gun," Doyle muttered. "I tried to stop him—poor devil."

"So that's what muffled the shot," Knight raised his eyes to Slade's face, and at the look in his eyes the Four



Faces' pilot cringed. "We're going out of here, Slade—and if anything goes wrong, you're going to pay double for killing Creele!"

Slade's dark eyes stared down at the syringe. His lips moved, tremblingly.

"I'll do—anything. I'll get you clear—"

Knight's gaze flicked over Slade's fur parka.

"Take that off—and your helmet and goggles, too. Doyle, see that he gets into my flying-coat and helmet while I switch."

The exchange was quickly made,

for Slade seemed to be completely cowed. Knight fastened Slade's winter helmet, drew down the combination goggles and breathing-mask which left only the tip of his nose and his lips exposed behind a fine wire mesh. Turning up the hood of the parka, he picked up the syringe, also the gun he had laid down.

"All right, let's go! Doyle, put Slade's pistol in one pocket and Vornoff's in the other. Keep your hands on them—but don't draw until you have to."

Doyle nodded, and Knight looked coldly at Slade.

"Turn up that coat collar, and when we get outside keep your head down in it. Stumble along as though you've been drugged. Make one move to attract attention and I'll jab this needle into your throat."

"But what are you going to do with me?" Slade said fearfully.

"That depends on you. Now go ahead."

They went into the hall, Knight keeping close to the Four Faces' pilot, gun poised and the syringe held significantly. As they passed the door to the radio and television room, one of the operators looked up, but Knight shoved Slade by and prodded Doyle with his pistol. The operator grinned, turned back to his instruments. Knight halted Slade when they came to the building entrance. Keeping the big pilot covered, he cautiously opened the door half an inch. Floodlights made the outside brilliant. The rocket-ship was on the launching-car, and he saw an engineer at the control board beside the platform. The crew was waiting, and beyond them a crowd of mechanics in parkas was waiting to place the rockets in position for shooting. He looked intently at the nearest gleaming projectile, saw a detonating pin in the nose. It had a safety-device to keep it from being pushed accidentally.

"Exactly what happens when one of those detonators is shoved into the nose?" he demanded of Slade.

"It releases a spring that opens the hydrogen and ozone tanks," Slade looked at him in sudden terror. "You fool! You'd kill yourself as well as the rest of us!"

Knight smiled behind the fur-lined flying mask. "And hydrogen explodes when it's mixed with more than fifteen percent of oxygen . . . I wonder how I could—"

**T**HE sputter of the Northrop's motor quickly ended his musing. It was the sound for which he had been waiting. He opened the door as the motor settled into a steady thunder.

"Head down!" he said in a harsh



undertone, and Slade hastily obeyed, stumbling along the frozen ground toward the two-seater. Several of the mechanics stared at the trio, and Knight saw their frosty breath as they exchanged comments. He held the syringe in plain sight, knowing that the plan to drug the prisoners had probably become known to everyone on the base. The Northrop was only a short distance away, and his hopes soared as he saw there were only two men beside it. One of them had just climbed from the front pit after starting the motor.

"Be ready to grab the rear-pit guns," he whispered to Doyle. "I'll stand those two off while you jump in."

The man who had started the motor turned as Knight was speaking. It was Gunderson, red face half-covered by a parka hood. He took a step forward, went rigid as his eyes flicked to Slade's bent head. He leaped back, gloved hand clawing for the gun strapped at his hip. Doyle sprang to one side, jerked the two pistols from his leather coat. All three guns blasted. Gunderson spun around, pitched into a heap on the ground. The mechanic back of him died for the gun he had dropped.

Knight fired, and the mechanic rolled over with a slug through his right side. It was only an instant—but in that split-second Slade whirled and raced under the Northrop's wing. Doyle triggered a shot after him, turned and vaulted into the ship. Across at the platform, the servicemen were breaking wildly for shelter. Knight saw one man sprint toward a machine-gun mounted near the main barracks. He fired, missed, was aiming again when Doyle's .50's broke loose with a deafening roar.

The running mechanic fell, riddled, and Knight sprang up onto the step of the two-seater. Machine-gun tracers shot above his head as he gripped the stick and throttle. He opened the radial and sent the Northrop plunging out into the center of the field. Doyle swerved his Brownings, raked the crew of the machine-gun which was blasting after them.

Knight bent over the controls, brought the Northrop around in a

swift turn. His radial almost wide open, he hurled the ship toward the massed rockets. A furious cross-fire from three directions drove him into a zoom before he could trip his guns. He chandelied over the trees, nosed down to gain speed and to blanket the gunners' barrage. The Northrop, now a mile from the base, banked in a tight turn—and now the rocket-ship came racing up the inclined track. Half-way to the top, its jets belched out a blazing white streak, and the man-made meteorite leaped



upward at terrific speed. The launching-cradle struck the braking device and rolled back, then the rocket plane screamed up into the night.

Doyle spun the rear-mount and fired, but his burst went two hundred yards behind the rocket-ship. Knight shoved the stick forward, dived back at the field. Another storm of machine-gun fire met the plummeting Northrop. He crouched, eyes fixed on the glistening rockets below. Bullets were pounding into the wings, but he held to the dive. A glare of white light reflected in the cracked cowl mirror. Slade was pitching the rocket-ship headlong after them!

With an unspoken prayer, Knight tripped the forward guns. Glowing pinkish lines stabbed down at the shining rockets. The Four Faces gunners broke and fled in panic. For an instant, Knight thought his desperate scheme would fail as his tracer lines hit the huge projectiles and ricocheted. Then suddenly a bolt of white flame shot from the rear of one rocket. He jerked the stick to his belt, and the Northrop zoomed madly.

**A** TREMENDOUS concussion shook the two-seater, and a dazzling glare lit up the sky. The Northrop whipped onto its side, was lifted vertically five hundred feet. Knight's senses reeled as once again a withering heat engulfed him.

Dazedly he waited until stick and rudder had ceased their crazy flopping. The Northrop fell off, went into a wobbling glide from which he brought it into straight flight.

Out of the raging holocaust which a few moments before had been the base, another and still another explosion blasted, hurling masses of smoking earth and flaming wreckage high into the air. Knight stared back, and seeing Doyle slumped half-conscious in the rear cockpit, he raced away from the wrecked base.

But then something streaked across the sky at the Northrop, and the Q-agent's pulses leaped as he saw the black rocket-ship. Slade had escaped the inferno, was plunging in for a final vengeance!

Knight jammed the throttle wide open, trying frenziedly to reach the scattered clouds above. With jets roaring, the rocket plane closed the gap. Knight kicked desperately at the rudder. The Northrop skidded wildly to the left and Slade overshot. Knight's fingers closed on his stick buttons, and with another furious kick at the rudder he raked the zooming ship.

The jet flames ceased. A jagged black strip tore from the top of the streamlined cabin, then the whole upper covering of the speeding monster ripped off in the wind. By the glare from below, Knight could see Slade pounding frantically at a lever.

A thin flame momentarily issued from the jet nozzles, then a blinding flash lit up the clouded heavens. An explosion followed that drowned the radial's thunder—and the rocket-ship was gone!

**K** NIGHT swiftly banked to avoid the rain of blazing fragments. As he straightened out on the course back to Shanghai, Doyle sat up and gazed anxiously about the sky.

"Hey, Dick! Look out for Slade! He's around here somewhere."

Knight looked grimly down at the last falling bits of the rocket-ship.

"Yes, he's around here . . . somewhere. But," he added as Doyle stared bewilderedly, "the Dark Angel has fallen from Heaven."

## If War Strikes Tomorrow Will America Be Ready?

(Continued from page 13)

greater range, and much more effective than any visualized three years ago. Hence, an air fleet of 2,320 planes today is several times more powerful than one of comparable numerical strength a few years ago.

It should be borne in mind that modern aircraft cannot be quickly

improvised. The construction of airplanes necessarily takes considerable time. Hence, our peacetime strength should approximate rather closely our requirements in war. Furthermore, in a major war, our air arm would probably be engaged almost immediately on the opening of hostilities.

Therefore, it is desirable that it be practically on a war footing in time of peace.

The program of modernizing the equipment of all components of the Army should be accelerated in order that we may quickly improve and expand such organizations as the Air



Corps, the anti-aircraft artillery, and the seacoast defenses. Also, the enlisted strength of the Regular Army should be recruited up to its authorized strength of 165,000—and maintained at that strength. More officers should be authorized for the Army as a whole, and at least 30,000 Reserve officers, in addition to those serving with the Regular Army and the C.C.C., should be given active training every year.

(Editor's Note: It is of interest to note here, that besides the 2,320 new planes which the Army hopes to have by 1940, the U.S. Navy has called for bids covering—besides other aeronautical equipment—270 huge bombers at an approximate cost of \$20,000,000.)

Our next statement comes from Mr. Enyart, of the N.A.A. His conclusions, which bear primarily on the armament race of powers across the Atlantic are based upon observations he made during his trip to Europe last year undertaken to survey the air strength of the big military nations.

#### SAYS U.S. AIR DEFENSE PLANS ARE PUNY

By William R. Enyart  
*Secretary, Contest Board, National Aeronautic Association*

**T**HE present combined strength of the United States Army and Navy air forces totals 2,400 planes—as compared with the 25,000 military machines of the European nations together.

For, while these figures are estimates rather than actual count, the present equipment of the European powers can be listed in this order:

Germany, 5,500 military airplanes; Italy, 5,000 military airplanes; France, 4,000 military airplanes, and England, 3,500 military airplanes.

And if you'll add to these figures the current probable total of Russia's military aircraft, you'll see that the grimness of the picture grows apace! In Germany, they will tell you that the Soviets have between 15,000 and 20,000 service ships—a figure based, the Germans say, on accurate sources of information.

Russia is Germany's real reason for re-arming. But the far more conservative estimate of 7,500 Soviet military aircraft still gives a present-day total of more than 25,000 ships in Europe.

Compare these figures with the present total aircraft strength of our combined army and navy air forces!

While it is true that our experimental military machines are probably slightly ahead in performance of the best foreign models, European powers are not noticeably lagging be-

hind us in design. England, France, Italy, and Germany all have experimental pursuit planes in the 300 m.p.h. class. And the bombers of these four countries approach and in some cases exceed 200 m.p.h. Our latest Boeing bomber has a top speed of 230 m.p.h.

Space will not permit me to give all the details of the great armament advancement programs of the European nations, but actually, on careful comparison, it seems that America's own air defense plans are positively puny!

Now comes the opinion of Arch Whitehouse, with whose dramatic and forceful features on all phases of aviation our readers are already familiar—

#### NAMES SPECIFIC WEAKNESSES

By Arch Whitehouse  
*World War flyer and military writer*

**A**S one who has experienced the shock and thud of actual warfare—particularly warfare in the air—I have long been interested in the progress and advancement of military aviation. In connection with my writing, I have been fortunate in making valuable contacts with authorities on various branches of military aviation both here and abroad—men who have been more than generous in their offerings of information.

In other sections of this feature, recognized authorities have had their say and you must accept their findings and opinions as those of men who *should* know—I can only take actual news events and attempt to interpret them as I see them.

**I**F a war with Japan is imminent, as many believe, it is my opinion that we shall find many weaknesses in our three services. But the same situation would arise today in Great Britain, France, Russia, or Germany. It takes actual war to put a keen edge on weapons of war. We may stage war games, Army maneuvers, and aviation mass flights—but none of these things actually add much to the strength or efficiency of a unit. It is not until enemy cannon roar that we find out what our *true* strength really is.

If we have to pit our forces against an enemy that has been in constant "active-service" training since 1932, it is quite evident that we shall be under a great handicap at the start. It will take months to trim ships, bathe the wounds of the baptisms of fire, and put men through that very unpleasant phase known as "getting experienced."

Those who would sniff and sneer at our apprehension over conditions on the west coast, and particularly

the conditions that have long existed in the vicinity of the Panama Canal, are reminded of the recent move by the House Military Committee to tighten up the restrictions on photography of vital military and naval defenses.

President Roosevelt has backed up the Committee, which has stated that "things going on along the Pacific coast have made necessary the drafting of legislation which will prohibit the making of unauthorized sketches, maps, or photographs of this country's fortifications."

According to the committee, too many free lance motion picture and "still" photographs of vital military fortifications have been allowed. Both Secretary Woodring of the War Department and Secretary Swanson of the Navy have recommended preventive legislation.

One member of this committee, Representative Thomas of New Jersey, stated that agents of the Japanese government are now engaged in a study of the Panama Canal. They are photographing strategic points and charting naval and military defenses operated by the United States. Mr. Thomas also stated that he personally has obtained the information that Japanese boats have been operating in waters near the canal under Japanese government orders in order to spy on defenses and to locate suitable landing places on the Pacific side of Central America. So what might *this* mean?

Slowly but surely the evidence piles up that the United States must begin to make a definite stand on a program of defense. In my opinion, she can no longer ignore the fact, brought to light every day, that the Japanese government is no longer a friendly nation. Events of the past few months in China have given the public of Nippon a new hope for Empire conquest. The affair of the U.S.S. *Panay* and the failure of the United States to do anything but file official protests naturally gives them much encouragement. The Japanese have insulted the British government in the same manner and have received nothing in return but a formal statement of objections. If she can bluff the two leading naval powers of the world in this manner, is it any wonder that the "man on the street" in Tokyo believes that Japan is now ready to take complete control of the Pacific?

It is not inconceivable that Nippon really believes she may one day be able to cut our Atlantic Fleet off from the Pacific by destroying or capturing the Panama Canal. And she probably believes that Great Britain will be unable to join the United States in any naval campaign in the



Pacific, because on the surface of things, at least, Great Britain has all she can take care of in Europe.

If Japan did make a swift move to capture the Panama Canal and succeeded, she would most certainly place the United States in an unenviable position. For us to drive them out might mean the complete destruction of important points along the canal and it most certainly would close the waterway to traffic from the Atlantic to the Pacific.

It would demand that a certain number of troops and Naval vessels be moved from the home shores—which is just what Japan would wish if she intended making a thrust at points along the Pacific coast. If Japan has made a secret treaty with any of the Central American states whereby she could get necessary supplies, she might be able to hold out at that point for months.

On the other hand, the United States might be forced to put up with the capture of the canal in order to keep her forces concentrated along the home borders. That might be a wise move from a military or strategic point of view. But it would not add much to our national prestige, either at home or abroad.

What, then, are our defenses? Can we defend our shores with the weapons available? Well, a chain is only as strong as its weakest link, according to adage. So let us now consider a few of those links:

**T**HERE has been great exultation in this country as a result of the success of our new Boeing bombers, the startling speed of the Curtiss P-36's, and the striking battling powers of the new Bell Airacuda. And why not?

Even so, we'd better not let our enthusiasm blind us to the many realities bound up in national defense, particularly where aircraft are concerned.

One statement that should help us get back to earth came a couple of weeks ago from General Malin Craig, U.S. Chief of Staff, who has been in Spain for some time studying modern warfare. He points out that our Army Air Service will have to find something better than a .50-caliber machine gun if it expects to hold its place in the military world of today.

The General, who has seen several air battles in Spain and who has checked the results of actual gun fire against modern military aircraft, realized at once that our present machine guns don't carry enough fighting power and that higher caliber weapons will have to be obtained.

We of FLYING ACES have aired this same point more than once. And on several occasions, our readers have

openly disagreed with us. Usually the discussion came up in connection with the old argument concerning the pursuit plane *versus* the high-speed bomber. We have always claimed that the high-speed bomber-fighter is a far more valuable sky-battler than the modern pursuit because of the fact that it is more heavily armed and is specially built to withstand the battering of machine-gun fire such as that offered by the modern pursuit.

What is wanted, of course, is a suitable air-cannon or high-caliber machine gun. Unfortunately, we have no such gun in this country—hence we may have to go abroad to get one! The only available weapon of high caliber here does not fill the bill, according to our Air Service armament staff, because of its comparatively low muzzle velocity. And the weight involved is no doubt another of their arguments.

A second shocking statement that recently "broke" in the press revealed that the U.S. Army is very weak in anti-aircraft gun strength. According to this report, there are only 42 modern anti-aircraft guns available all over the country! True, it was admitted that 29 more have been ordered—but all told, that's too few A-A guns for a country of our size.

Let us compare our A-A strength with that of nations abroad. Now while there are eight such guns available for the defense of New York City, the British, who have 125 modern anti-aircraft guns within a ten-mile radius of the City of London still do not think they are particularly up to strength. And the German Army at present boasts of 480 anti-aircraft guns of various calibers.

Here in America we have but four Regular Army anti-aircraft regiments and ten listed with the National Guard. The 62nd Coast Artillery, which is located at Fort Totten, N.Y., is one of the four Regular Army outfits, and it is probably the best equipped. It has eight 3" mobile guns, plus a machine-gun battalion and a searchlight battery. This comprises the only A-A defense now available to protect New York City!

When the present anti-aircraft program is completed several years from now, we'll have about 44 mobile 3" anti-aircraft guns. But let us remind you that this 3" gun is the only weapon we have that can throw a projectile at a plane flying above 5,400 feet!

But hold tight—there's more on this defense question:

In the advance publicity sent out by the Navy Department regarding the coming March 1938 Navy war games in the Pacific, it's revealed that two of our latest aircraft car-

riers will not take part. Considering the wide scope of "Fleet Problem 19" which they're going to run off, we wondered why our full Naval strength wouldn't be on tap. And then we learned that both the *Yorktown* and the *Enterprise* "will not be ready because they have encountered construction delays."

Well, what's wrong? The *Yorktown* was launched about two years ago and the *Enterprise* a few months ago. Surely, they must have had time to groom them after their shake-down cruises.

What went awry? And who's to blame?

**W**E mention these matters for what they are worth. It is not to be destructive that we bring them out.

As for our guns, we only suggest that if they're unsuitable for the work at hand, it is high time something was done about it. Other countries have been *trying* to do something about it for years, but over here we seem to sniff at any suggestion of high caliber weapons aboard aircraft.

The anti-aircraft problem is even more pressing. Why not—and this is my own personal opinion—develop volunteer anti-aircraft regiments in all of our big cities in order to let those who are willing to offer their services for this form of defense get together and learn the game?

Anti-aircraft drills could be carried on at night by civilian groups with little trouble. There are hundreds of young men who cannot get into the regular Army or take full time out for National Guard work who could spare a night or two a month to learn the rudiments of anti-aircraft work, searchlight drill, and the like.

Lastly, we don't know what the real dope is on the *Yorktown* and the *Enterprise*. But most certainly something is wrong.

#### OTHER PERTINENT VIEWS

**A**ND here are a number of short statements of vital interest in such a symposium as this. First comes the message of Floyd E. Evans, State Director of Aeronautics for Michigan. Mr. Evans' words will find favor with FLYING ACES readers—for thousands of them have made similar suggestions themselves.

"Give every junior and senior in our land grant colleges," says Mr. Evans, "the opportunity to learn to fly. For in these colleges—where the land was originally donated by the Government from public grounds and where as a result military training is given—we have a ready-made means of solving the problem which faces us from abroad, that of a



threat to our national security."

According to Major Lester Gardner, secretary of the American Institute of Aeronautical Sciences and a Councilman and Past President of the Aeronautical Chamber of Commerce of America "flying troops" now constitute a new menace.

Following a recent intensive inspection of Europe's feverish armament activities, Major Gardner made this declaration:

"It is obvious that a great change has come about in the use of aircraft in war. Heretofore, it was claimed that aircraft could only observe or bombard, or destroy other

aircraft. Now, however, can be seen the first evidences of air troops that can be landed or dropped behind foreign lines in sufficient numbers and with adequate equipment to maintain their positions. This is a new conception of warfare, and it may result in air forces maintaining supplemental troops especially trained to act as our marines do after our Navy has taken coastal territory."

And now Major Albert Stevens, U.S. Army Air Corps flyer and famous for his balloon excursions into the stratosphere, says:

"The United States leads today in aviation in most—though not all—

details. But the only way we can hold the lead today against the terrific race of war preparations in other countries is to put more money into government research."

Here, then, you have had the observations of several experts—and we hope that the statements have gone far toward clarifying for our readers the problems faced by our country as war-madness enflames the world. Above all, one fact is outstanding in the views of these authorities—America must never cease its military vigil so long as the world suffers the pestilence of war.

## Eclipse of the Hun

(Continued from page 16)

Gilpey filled his pipe, tamped down the wad of tobacco, and lighted it. SW-W-WISH! He back-pedaled like a hard-pressed Limey prize fighter, his hands pawing at the ozone. One side of his mustache was smoldering and one eyebrow was completely obliterated.

"Uh—er—you got that—that tobacco that Pinkham— Oh-h-h! That was evidence I was keepin' to put that crackpot in a sling, Gilpey," the Major gulped. "It's not mine. I—"

"You'll sweat for this, Garrity," Gilpey bellowed. "Criminal assault! That's what it is—criminal assault!"

MEANWHILE, over in Bar-le-Duc, Phineas, who had whiled away most of the day, was getting quite a boot out of a Frog who had set up a telescope in front of the Café of the Pink Horse. The Frog had a sign hanging from the sky prober which invited passers to see Venus for "quarante centimes."

"Monsewer," said Phineas, ambling up, "will she look like her pictures, huh? You should get arrested, as such a display is endangerin' the morals of the A.E.F. Haw-w-w-w! Carranty centees? Ici, monsewer, I will get me an eyeful." Thereupon the pilot from the west squinted through the telescope and his big ears twitched a little. "Boys! It sure brings 'em up close, don't it? I don't see no dame, though. Where is she—in the big dipper, monsewer?"

"Cochon!" snorted the Frenchman. "She sees ze planet, comprenez? Bah! Nozzeeng vous comprenez of ze astronomee. Ici ees ze book I have sell eet for nozzeeng almos'. Lieutenant, to you. Eet tell all ze planet an' ever't'eeng, oui."

Figuring that there might be something in the "music of the spheres," the Yank dropped a couple of coins into the Frog's hand and walked away with the book. Then in the light

shining from the doorway of an *estaminet* he flipped the pages curiously. "Quite a volume!" he soliloquized. It told all about the stars and the rise and fall of tides. Moreover, it went on to enlighten the ignorant citizenry who bought it regarding such celestial phenomena as the eccentricities of the moon and sun. It even foretold the end of the world.

Indeed, Lieutenant Pinkham got so interested in it that he went into an *estaminet*, found a place to rest his empennage, and became a bookworm for almost two hours. And then it was that three M.P.'s walked in, found him there, and advised him that he was under arrest.

"Huh?" the freckled pilot gulped, looking up at the military club-swingers. "It was not me that killed cock robin," he cracked. "I did not even know Kitchener was on board that battleship. You can't prove I got Napoleon out of Eiba. It's a lie! I will see Robespierre as I am not an aristocrat!"

"Balmy, Mike," opined one of the M.P.'s. "Uh—er—awright, Lieutenant, we won't harm ya none. It's only that we want to take ya home where you can git looked after. Awright, don't git scairt as—cripes, no wonder he is A.W.O.L., Mike! That crack-up—"

"Awright, I'll go," Phineas consented blandly. "But you got to let me ride the white horse. *En avant! Vive la France!*"

Anyhow, in less than an hour Lieutenant Phineas Pinkham was back in the Ninth Pursuit Operations Shack standing in front of Commanding Officer Major Rufus Garrity, who now eyed the miscreant with a baleful gleam in his optics while he fingered a spanner wrench longingly. What's more, Captain Howell was waiting just outside the door with a chair leg clutched in his fist.

"The crackup knocked you goofy,

huh?" the Old Man ripped out. "But you headed straight for Bar-le-Duc like a homing pigeon, and then they find you sittin' in a bar room reading astronomy! Listen, Pinkham, you mushhead! Now that you've recovered, do you remember giving Howell two nice birthday presents? For instance, that tobacco! I had it here for evidence and a brass hat came in and filled his pipe with it. He's going to wash me up for assaulting a superior officer! How d'you like that?"

"Haw-w-w-w! I like it fine—er—what'd you say?" the unfaltering alibi artist stammered.

Major Garrity grabbed up the wrench, but the Recording Officer saved him from a murder indictment. Then the R.O. yelled for Lieutenant Pinkham to run, as how long did the crackpot think he could hold the Old Man?

So Phineas went through the door fast—so fast that Howell missed when he lunged forward to paste the Iowan in the skull with the chair leg. Thereupon, Bump Gillis threw every phonograph record that the squadron owned at the Boonetown trickster—and missed him with all of them. But he didn't miss Sergeant Casey, who got three teeth loosened by one that ricocheted against his chops. That particular musical disk was labeled *The Yanks are Coming*.

When Phineas finally reached the safety of his hut and barricaded the door on the inside, he was sure he could already hear the creak of wheelbarrows and the click of spades against loose rock in Blois.

But a wide grin bisected his homely countenance as he sat down to get a little more education on the solar system. For one paragraph in his astronomical book particularly intrigued him. Quickly he lounged down upon his cot with his knees drawn up under his chin and devoured the



print with intent blue eyes. Yes, a possible way to throw a monkey wrench into The Owl's solo system had at last dawned on him!

OVER on the Jerry side, Herr Hauptmann Adolph August von Heinz was just beginning to arouse himself for his night's work. The sun had gone down, and he emerged from his hut like a predatory bird, blinking his greenish eyes and squinting up into the gathering gloom. A field mouse saw him, squeaked, and sprinted for its underground hangar.

Von Heinz looked up into the branches of a tree and chuckled. Two green eyes were peering down at him.

"Wie Gekts, mein Freund," he guttured. "Alvays du bist ein sign uf gut luck, ja. Ach, du bist maybe der ghost uf mein grosser Fadder, ja. Der trap I haff set idt vunce und maybe tomorrow idt giffs two nize fat mouses fur you, mein Freund mit feathers. Ha! Blacker yet gets idt der night by der minute und vork ist vhat shouldt be did, ja."

Heinie ackemmas got the shivers when von Heinz waddled out of the shadows of a hangar. "Mach Schnell, Dumkopfs!" he grunted. "Der Owl wants he shouldt fly yedt, ja. I dig mein claws by das Pingham's geneck und poosh him oop right oudt uf der Spadt."

"Ja wohl," a Heinie grease monkey said hurriedly. "Der Albatros ist in drei minutes ready. Ach, der geese bimples he giffs by me yedt. Donner-vetter!"

AT mess that night Phineas Pinkham simply acted as if he had done nothing at all in the way of upsetting the Ninth's apple wagon. As usual the crackbrained pilot made himself the life of the party and even kept a straight face when Major Rufus Garrity, a greenish tint to his chops, pulled a currant-studded roll apart and then yelled for Glad Tidings Goomer. The mess monkey rushed over, stiffened in front of the C.O.

"These ain't currants, Goomer! They're f-flies! An' I ate three of 'em, y-you—"

"Wha-a-a-a?" Bump Gillis choked out, a well-bitten roll in his hand. "Ugh—er—aw-w-wk, excuse me, sir, as I—"

"I don't see how they got in there," Goomer gulped. "That box of currants was awright las' week. But now that you mention it, I figure I had more than I oughta have had left after that las' batch, an'—" Glad Tidings scratched his head, turned his woebegone face toward Phineas.

"Now don't look at me!" Phineas yelped. "Always blamin' me, huh?

If you'd put fly paper in that kitchen, Goomer, maybe them—flies wouldn't git—haw-w-w-w-w! Boys, they do look like currants, all curled up like that, don't they?"

"Pinkham!" Garrity thundered. "How many did you eat?"

"Five," the suspected one sniffed. "Tie that one!"

"He did, too," Bump Gillis had to admit. "I saw him."

"There! Ya-a-a-ah!" Phineas said with triumph, kicking a paper bag under the table with his foot. "It is one time I prove my innocence."

"Not to me, you haven't," Garrity snorted. "If—if I ever—prove what I'm thinkin', you lop eared half-wit, I—er—pardon, gentlemen, I must get to the medico."

"Me, too," Howell chimed in. "Quick!"

"Haw-w-w-w!" Phineas mocked them. "All on account of a few flies! Why, they shouldn't hurt nobody. You're a bunch of sissies." And he, too, traipsed out.

Since mess had been late that night, it was already 10 p.m., so Phineas decided it was time to get moving. He grabbed a motorcycle and wheeled out of the drome, and the Old Man started court martial proceedings before the noise of the mechanical bug had died in his eardrums. Major Garrity then went over to the Equipment Officer and unloaded some verbal pyrotechnics that burned the man's scalp.

"But he said he had to get some medicine for you, Sir," the E.O. protested. "He said it was urgent and that I better not cause him to lose a second or I'd be a murderer. An' another thing, sir. He's nuts! He says to me: 'Watts, if there's a war goin' on, nobody would find time to bat an eye if there was a rumor that an island in the Pacific disappeared, would they?' I says 'No.' And then he asks me don't I think maybe a lot of big things have happened while we was fightin' a war and that both the Krauts and the Allies didn't even give 'em a second thought because they was too busy tryin' to lick each other. I says 'yes' an' he says—"

"You're nuts, too," Garrity cracked, then clamped his hands to his mid-section and groaned. "Cr-r-ipes, that medicine is worse than the flies. I bet that medico give me insecticide by mistake. Nobody does anythin' right around here. Nobody takes orders an' everybody's nuts. I hope I am busted before Saturday night!"

SKULLDUGGERY was abroad in Bar-le-Duc that night, and it was not riding on a snail's spine. Lieutenant Phineas Pinkham stood in a square in the Frog town taking a

peep at the moon through a telescope. He was not studying the markings of the celestial body, however. He was scheming, contemplating his chances of committing grand larceny and getting away with it. And strange as it seemed, it was Herr Hauptmann von Heinz who showed him the way. The Owl came over the Frog town and dropped deviled eggs down on Bar-le-Duc, whereupon the population scattered for cellars. And the old Frog with the telescope reached one ahead of everybody else.

CRASH! BINGITY BA-A-ANG! BLA-A-AM!

"Boys," Phineas grinned as he wriggled underneath a Yankee truck, "for once, seein' you makes me happy, you Kraut bum!"

Herr Hauptmann von Heinz, his raid over, swung back to his drome to load up with some more hell capsules. And with their nerves singing an anvil chorus, the citizens of Bar-le-Duc crawled out of their hiding places. But the old astronomical Frog did not make his appearance, so Phineas went in search of him. He found him in a corner of a cellar half hidden by big chunks of plaster.

"Voila, m'sieus. A new comet I have see her," the Frenchie was jabbering. "Aussi un nouveau set of etoiles. Oui! Oui! Sacre bleu! I see ze beeg deeper avec tres handles. Regardez, m'sieus. She ees only quarante centimes. Ze new comet deescovair' by m'sieu Jules LaFonde. Ze deescovairee of ze ages."

"Battier than a loon," Phineas chuckled as he got down to business. And then for another hour the populace of Bar-le-Duc observed m'sieu Jules LaFonde taking in *beaucoup centimes* from those celestially inclined. Then when the sky got a little overcast they saw him close up his business and go over to where a horse and wagon were hitched together in front of a darkened Frog shop. Here they saw him load his telescope into the wagon, heard him bade *bon soir*, and watched him roll slowly out of Bar-le-Duc.

It was during the ensuing forty-eight hours, that the portion of the Western Front lying between those two big wood lots, the Vosges and the Argonne, was in no end of a dither. Hauptmann von Heinz, the fly-by-night in the Entente ointment, the cocklebur in the Allied rompers, was beginning to make himself disliked more and more every time the calendar shed a leaf. The Owl had dropped bombs all over the place. He sprayed Yanks in their billets with Spandau lead and near Nancy blew the tires of a big boiler carrying a general of note. In fact, he shot the pipe right out of the big boy's teeth. Chaumont was indignant.



And so was a French taxpayer named Jules LaFonde—who accused a certain Yankee flyer of stealing his business right from under him.

Nor was Lieutenant Phineas Pinkham feeling any too good when Major Garrity dragged him onto the carpet a couple of days later. The Boonetown whiz had just come back from a stint over the Heinie excavations where he had been kicked around by a pair of sky-going Boches until he felt like a big ball of air wrapped up in pigskin. To make things worse, three overpowering M.P.'s were on the drome waiting around expectantly while Phineas was in before the cantankerous Major trying to fight off the rap.

"Huh!" the Boonetown bamboozler snorted indignantly when Garrity hurled the charges at him. "Oh, I have been a sleight of hand artist at times, but I ain't smart enough to make a horse an' wagon and a big telescope disappear. Are you sure the Eiffel Tower ain't missing, too? Search me! Look under my bed if you think I am hidin' a horse an' wagon. Haw-w-w-w, it does not make sense!"

"You come clean, Pinkham!" roared the Major.

"I will try to," Phineas retorted, "but I ain't had no bath for almost a week. There's somethin' wrong with the hot water supply."

"Not the barrel of it you've got into," Garrity hollered. "I'll give you just twenty-four hours to tell me where you took that horse an' buggy or—"

"Awright," Phineas sighed, "I will need that much time. But right now I am workin' on somethin' more important. Like the C.O. tells me, I bet if Java blew up and went right off the map, we would not know it until after the *guerre*, as nobody here thinks of anythin' but to cut each other a piece of throat, huh?"

"S-sure," Garrity grunted confusedly, "I g-guess so. Uh—say, what d'you keep asking everybody *that* for, huh? I've got a good mind to have your dome examined. Get out of here, and if you know where that Frog wagon and horse is at, you go and get them, you rattle brain."

"In two days I bet the Allies will have a directors' meeting to shake my hand, haw-w-w-w! It is Blois you think I am going to, huh? Well, I bet it will be to Faree in Pershin's limousine. Adoo!"

"He's up to something," Garrity ground out, biting his mustache. "That crackpot!"

"Huh," Phineas grunted loftily a moment later when he passed the M.P.'s, "it is a waste of time for you bums to be here. You might as well go back to the A.E.F. station house

an' take up your knittin'." Thereupon, he ducked into his Nissan hut, locked the door, and picked up his astronomy book, the title of which he read as "Comprenny voter eet-walls"—*Get Acquainted With Your Celestial Neighbors*.

Phineas quickly turned to a marked page and again read a paragraph that he had already studied a dozen times before. Then he looked up at his hut calendar and grinned as he noted the date—June 6, 1918.

"Well, you Kraut mouse hunter," he said aloud, "in two days somethin' may happen. If you had not knocked me down, I would not have met a sniper and would not have thought of what I've thought of! Haw-w-w-w! I am thinkin' of the hill billy named Mahomet who had to go to the mountain because it would not come to him. But a Pinkham—"

THE following night, The Owl came over and blazed particular hades out of Major Rufus Garrity's drome. What's more, he almost washed out three brass hats who had come down from Chaumont to investigate the purported mismanagement of the Ninth and to check up on charges of grand larceny against Phineas Pinkham. Indeed, the Boonetown marvel only escaped von Heinz's wrath by a whisker, for a tracer bullet passed by his proboscis so close that he tasted sulphur for the next five hours.

After the raid he hopped to headquarters. "I wish to volunteer to get von Heinz, as he will be out again tonight, sir," he said, saluting smartly, which was unusual for him.

"Beat it!" Garrity roared.

"Look here, Major," a brigadier interposed testily, "it looks as if what Gilpey said about you is true. Here a man offers to risk his life to tender the Allies a service and you discourage him. Pinkham, step over here!"

"Yessir!"

The Old Man groaned, pawed at his face, began to pull out his hair. Then he jumped up and yelped: "All right, Pinkham, get into a Spad—and to hell with you!"

"Your every wish is a command to me, Major," the intrepid Yank countered, saluting smartly again which further aggravated the C.O. "I would die for dear old G.H.Q. Adoo!"

It was a break for Lieutenant Pinkham. He hopped off fifteen minutes later, flew just beyond Bar-le-Duc, and landed in a sheep pasture. In the cellar of an old demolished barn a horse was hitched, and it was contentedly munching hay when the miracle man from Iowa arrived. There was a wagon hidden in the woods back of the barn. The errant Yank had oodles of time and did not

have to hurry the job in mind. The telescope, which he had taken apart and stored in a broken down cow stall, now demanded his undivided attention until midnight.

TIME skidded away. Over on the Heinie side of the fence, Herr Hauptmann von Heinz called it a night at the crack of dawn and ducked for the shelter of his hut. The Owl pulled a big square of canvas down over his one tiny window, stripped to his union suit, and hopped into bed to sleep away the hours of sunshine.

More time passed; then still some more.

Anyhow, hours later The Owl awoke with a start, and his big greenish eyes blinked. It was *very* dark inside his boudoir. He hopped out of bed, shook himself like a big bird that has been rained on.

"Ach Himmel! Der Dumkopfs ledt me sleep und der night idt cooms already. Donnervetter, das ist der time I shouldt go oop und haff idt der sport."

Quickly Hauptmann Adolph August von Heinz got into flying leather and barged out of his hut. The sky was dark and a few lights blinked over across the field where the rest of the Kaiser's buzzards hived up. The Owl spotted his Albatros in front of a hangar and the prop was idling. There were three other sky buggies not far away from it and two of the Mercedes power plants were being revved by Boche grease monkeys. Their crazy yowling drowned out all other sounds.

Suddenly a Kraut spotted von Heinz getting into his crate, and he let out an oral blast. But The Owl heard nothing but the roar of props. All he knew or cared about was that it was time to fly, that the sun was gone and the stars were out. He licked his chops, jammed the throttle home, and got away from the drome without noticing that half of the Jerry *Staffel* was chasing across the drome to stop him.

Yes, The Owl was in the sky and on the prowl, his hooked proboscis already sniffing for prey in the person of Lieutenant Phineas Pinkham. He was going to make another try at skewering the Boonetown upstart. He'd plug him right through his Nissan hut as he lay in bed. What sport!

NOW let us take a ride on the Pinkham chariot. Garrity's buzzard was ready to take the air at any moment. Directly between his twin Vickers, a telescope had been fitted, and Phineas sat waiting with his Hisso purring and one eye squinting through the space defier. A tree top which was really a mile away seemed



to jump right at him when he focussed on it. He could count the heads of three baby birds in a nest.

"Haw-w-w-w!" he guffawed. "Maybe I never was Annie Oakley's twin brother with a Vickers, but if a sniper can bring a Kraut to him with a little telescope, I can bring von Heinz up close with this high-powered baby. It surprises me sometimes when I think how smart the Pinkhams—er—if he is comin', it ought to be about time, haw-w-w-w! Well, the star gazers had it right. It is as dark as—there's the bum!"

Herr Hauptmann von Heinz, apparently confident that no other crate would be abroad in the dark sky, looked neither to the right nor the left as he pushed his Alb toward the Ninth Pursuit. En route, he skimmed over Pinkham's private air field, but he did not see the telescope-bearing Spad slide across terra firma.

The Owl went over Bar-le-Duc, swooped down on Garrity's layout, and gave it the well-known works! And when his guns were almost empty, he swung around and headed back toward home.

He was over Vaubecourt when he saw the Spad blocking his right of way.

"Donner und Blitzen!" the Kraut yelled. "Das Pingham! Ho! Ho! Only der few bullets I haff, budt das ist enuf."

It was at that moment that the Hauptmann let loose a loud "Was ist?" For a fearful ring of light in the sky above had suddenly attracted his attention. And as he stared at it, he grew as frantic as a nymph wrapped in poison ivy. His eyes watered under his goggles.

But even so, Hauptmann von Heinz had to stop ogling—for Phineas Pinkham has pointed his Spad, squinted through his telescope, and triggered his Vickers in 1-2-3 fashion. And The Owl now jumped as lead began eating into his Alb.

Through the Pinkham telescope, von Heinz' crate seemed not two feet away, so the Boonetown miracle worker pulled up his nose in a hurry to avoid what he thought would be a certain wash-out. Then he laughed when he took his right glimmer from the eye-piece of the 'scope and saw that the Kraut was still almost half a mile away.

"Boys, that scairt me for a min—" Phineas cracked. Then he again leveled his Spad, got a dead bead on The Owl, and opened up with his hemstitching again. The Kraut ship did a sort of curtsy, spun on its tail like a penguin with the hot foot, then righted itself and pointed toward Germany.

Hauptmann von Heinz was shaking all over. He was one big itch from

his scalp to his toe nails. That strange light in the sky did not come from the moon! "Himmel! Ach Gott! Vunce I am told—vunce I hear of der—Donnervetter!" The Owl squirmed in his pit, tried to see through goggles opaque with perspiration. He took his hands away from the stick to scratch himself, and the Alb, raked by Vickers lead, threw another fit.

"Haw-w-w-w!" laughed Phineas Pinkham. "How could I miss the bum? Boys, he looks like he was glued to my prop. Oof Vidderson, you fat-head! Take that, an' that, an'—"

The Kraut wondered if he had flown off his course and had got over Denmark. Nothing could have turned out so rotten anywhere else. Wires had snapped loose, a strut went wacky, and the Alb was handling about as smoothly as a concrete mixer. The Pinkham tracers had even set the dope on the Alb's wings to stewing and the smell of it crept up through The Owl's sniffing pipes. There was no fight left in the night watchman from the Black Forest, he was ready to hock the Kaiser for the price of a limberger sandwich.

"Donner und Blitzen! Ach du Lieber!" he groaned as Phineas kept scoring direct hits to punctuate each hoot of The Owl. "Dreamink I ben, ja! I vake oop und—Himmel! Besser I pinch meinself und—Gott, der hifes I itch mit! Der sun cooms where vas it der moon und—"

Nevertheless, Herr Hauptmann von Heinz got over the lines, went down in a hurry flying from memory, and cracked up in front of the Boche trenches near Thiaucourt. Boche Red Cross workers finally dragged him out of the mud and dumped him into an ambulance. And when he opened his peepers, The Owl let out a blood-curdling yell and threw off the covers.

"Where ist you ben goink, hein?" somebody barked at him as he crawled out of bed.

"By der zellar or where ist der darkness. Der sun—Himmel! Already yet I vill scratch meinself for drei weeks maybe. Das Pingham he ist der deffil. Night idt ist und still nodt night. Gott! Herr Hauptmann von Heinz I am—der Owl—"

"Himmel! Der Owl he ist!" yelled an attendant.

"Ja! Das ist der eglipse uf der sun, Herr Hauptmann. Und nobody tells you, nein?"

Even though he had two cracked ribs, a knot on his head that made it look like a big misshapen quince, and a bad case of the hives, The Owl thought of nothing at the moment but to get where it was dark.

"Ach, das Pingham!" he wailed. "Was einen sharpshooter ist he! Me he hids efery time he fires der Wick-

ers yedt. Oudt uf der vay! Himmel!"

PHINEAS PINKHAM approached the drome of the Ninth when the eclipse was about over. Major Rufus Garrity, some brass hats, and the entire personnel of the outfit were out on the tarmac to watch the Spad come in.

The resourceful pilot took an inventory of the drome as he eased his plane down. Part of a hangar was as charred as a bride's first biscuits. His hut, even from a distance, looked like a nutmeg grater standing on end. The windows of the Frog bungalow which housed Operations likewise betrayed evidence of von Heinz's visit, and Phineas saw Sergeant Casey limping across the field like a Civil War vet.

"Haw-w-w-w! The bum forgot to duck. I hope that Kraut give some brass hats their first stroke."

Phineas then swung his taxiing Spad toward Casey and scared the ackemma out of ten years of life. The flight sergeant flattened, swore, and pulled a wrench from his pocket. He got up and threw it, whereupon a brass hat who was in the way let out a pain whoop and grabbed up a shin to see if it needed splints.

"Arrest that man, Garrity! For deliberate assault and intent to—"

"One thing at a time!" the Old Man groaned. "One thing at a time! We just saw one miracle today and I bet you'll hear about another when that freckle-faced baboo—lo-o-o-o-ok ou-u-u-t!"

"He's got three guns on that crate," Bump Gillis hollered. "How in—?"

"Gun?" Garrity bellowed when the Spad finally stayed put. "That's a telescope, you nitwit. That robbed Frog—oh, that crackpot! I'll get him for this. He'll go to Leavensworth and then Atlanta. I'll—"

"Evenin', bums," Phineas chirped. "What a night—er—day, huh? Haw-w-w-w-w! It worked. The Owl thought it was night and come upstairs because he doesn't read astronomy. He ain't educated like the Pinkhams. I knew the eclipse was comin' upon this eighth day of June in the year of our Lord Nineteen Hundred and Eighteen. But everybody else around here forgot, an'—awright, I stole the telescope. I mean I borrowed it. It ain't damaged. I says if snipers can bring targets up to 'em with one of them things, a Spad could bring a Heinie crate up close so's a guy couldn't ever miss when—Haw-w-w-w-w! You won't see that bum around for awhile, if ever. I met him on his way back. How long does it take to get over a fractured skull and two busted legs, huh? Awright, arrest me. But no jury will convict me."



"Y-you figured that out, Pinkham?" a brass hat roared. "Why—why, Major, this man is a—a—"

"Let me tell you," Garrity interrupted, "that is if you're not a church elder. I've been thinkin' up things to call him ever since he first set foot on this—"

"Haw-w-w-w-w!" erupted the culprit-hero. "Sticks an' stones may

break my bones but names'll never—"

"You're a wonder," a brigadier then said to Phineas. "I'll see that you get a medal for this!"

"Aw, don't bother," the scion of the Iowa Pinkhams flung back over his shoulder as he headed for the farmhouse. "I can get all I want for a franc or two. It is only my duty I

am paid to do. He-e-ey, Goomer, what's for mess today, huh?"

"The fresh jackanapes!" sniffed the brigadier.

"You have no idea," Major Garrity grinned. "He eclipses anything I ever saw, sir. If I was a Limey, I'd call him an 'owlin' success, huh?"

Even the brass hat laughed at that one.

## Wings Against Doom

(Continued from page 20)

the darkened wastes below. He had to disregard his compass, for its needle was swinging like a canary in a cage. The North Magnetic Pole, now approximately due east, was too much for the instrument.

A wicked gale had now sprung up to buffet Berry's ship, and squalls of blinding snow were sweeping down from the Polar regions. How any man was expected to locate a lost party in that smother was something beyond human understanding—but Berry flew on!

Down below, there was nothing but a dark blur, interspersed—he knew but could not see—with rock and coastline. What's more, there was no horizon, so Berry had to be guided by nothing more than flying sense. He was really flying by the "seat of his pants" and a sixth sense of direction.

Suddenly he tensed. For a sudden break in the snowfall disclosed the dim outlines of a building—and according to his time allowance, he must be somewhere over Paulatourk. He nosed down through a blizzard, caught sight of human figures. They were emptying bags on the snow.

Berry came down lower, his plane rocking violently in the whipping gale. He could now see that the men were dumping sacks of coal out on the snow to give him a mark to land by. He banked sharply, judged the terrain—and came in.

As the Junker's skis slid to a stop he saw Bishop Falaize running toward him. The cleric was almost overcome.

"Wonderful! Wonderful!" was all he was able to gasp as he gripped Matt's mittened hand.

And it was wonderful! The impossible had been accomplished!

But Matt knew neither he nor his party were out of the woods yet. His next log entry tells the story:

*December 14th—Mission to Paulatourk, 75 miles. Took off at 10.15 a.m. with Bishop Falaize and party, six passengers. Landed at 11 a.m. Seemed to be clearing from the south; and since we had a fair report from Aklavik, we took off even though it was pitch dark. Unable to read instruments in cockpit. Got some place over Darnley Bay, but had to turn back as it was too dark to discern any landmarks. It was also badly overcast and snowing ahead.*

The party was then earthbound for five days due to terrible weather conditions.

Then came the entry:—*December 19th—Clear morning and good report from Aklavik, so we pushed off. Got quite hazy later, and at Liverpool Bay it was so bad we could not follow the coastline at all. Forced to land on small lake off the coast. Visibility nil. Light terrible. Temperature 48 degrees below zero on ground.*

Hideous weather continued to such an extent that it was not until December 27th that Matt finally landed back in Edmonton. He had flown a distance of more than four thousand miles in 24 days to bring out a party that the world had given up as lost.

**W**ERE this story to end here, it would indeed seem that there is no reward for true heroes. But this is not the case. Bishop Falaize quickly made a statement:

"The flight of the plane which came to our rescue will be classed as one of the most audacious accomplishments in Canadian history. Ignorant of the nature of that part of the country, flying in the Arctic ob-

scurity, and hammered by a violent storm which blew snow a thousand feet in the air, Aviator Matt Berry and his engineer made a splendid landing near our hut. How he found us at all is a mystery—and it will forever remain a mystery to me."

Just about this time, a movement was afoot to present Major D. McLaren with the celebrated McKee Trophy in reward for his sterling work in coastal patrols and his unremitting efforts to have an air route put through over the Rocky Mountains. The McKee Trophy is given for "The greatest contribution to Canadian aviation during one year," and it is greatly coveted by flying men.

But when Matt Berry's epochal flight became known to Major McLaren, with true gallantry he stepped aside and nominated Matt for the honor. And when the committee charged with making the award met, the Major's generous gesture was received with favor and Matt Berry became the 1936 recipient of the McKee Trophy.

While we contemplate the record of the amazing Matt—who's still modestly flying the difficult Mackenzie River sky route—it's occurred to us that another trophy might well be created for him. It would be a trophy for resourcefulness, that trait which spells the difference between success and failure in the desolate north.

And I'm sure that if you read through Matt's log book as I did, you'd second my nomination—for there are scores of entries like this:

*In landing at Newbrook, left ski hit a rut and turned under. Undercarriage not injured, but pedestal broken. Spent all night fashioning a solid block pedestal. Next day took full load off rough field and found new pedestal Okay.*

## Coffin in the Fog

(Continued from page 26)

that you are taken care of. I need that old bluffer, and they're not going to railroad him up the river for bopping off a guy who goes around swiping hearses."

"—And dead bodies," added Keen. With that, he helped Scott into his ulster, packed him out the door, and returned to his breakfast.

"Hooray!" beamed O'Dare. "Now

we've got Mister Lang where we want him!"

"Yes, but those crooks have apparently nabbed the predictor. We've got to get that before the companions



of the late Mr. Haines try to get away with it."

"Haines? It was a bird named Hatcher who was killed."

"Of course. But I'm sure Haines and Hatcher were one and the same. Haines was the man who called me up about the cartridge they use in the predictor. He wanted me to figure out the ballistics of it. At that time, I didn't realize his crowd had swiped the part."

"Smart gag, getting it away in a hearse. But who did waylay this Haines-Hatcher guy?" asked Barney with a puzzled frown.

"Well, it was Lang's gun," said Keen without answering the direct question. "And I have a hunch the old guy was on the right trail. But if so, where is he now? And where is the predictor?"

"Find Lang and you get the part, eh?"

"Exactly!" said Keen. But then his expression changed. "Still, I'm not so sure," he added. "This gun business has me worried. Let me think."

And so, after Barney left Keen and went upstairs to dress, the ballistics expert went on thinking aloud: "Lang might have trailed me to Hatcher's place, and then in turn trailed Hatcher. Suppose he stumbled into the mess when Hatcher was about to drive off with the hearse and the body, or whatever it was; suppose Lang stumbled into that—and was picked off. They might have left him there, or they might have got rid of him. They *were* near the river!"

He pondered on for several seconds, then leaped to his feet.

"Step on it, Barney," he yelled. "We're leaving for the city in half an hour!"

**A**LL the way into New York City, Keen recited his plan to Barney and instructed the Mick in the role he was to play in it. And by the time they were crunching up the slush of 38th Street, the Irishman had his part letter-perfect.

They finally pulled up beside the funeral parlor of Mathias Dooling, whereupon Keen left the Mick beside the car and approached the door of the establishment. The undertaker had set himself up in the lower portion of an old red brick building. There were two wide windows on the street level, one presenting a stark display of cheap caskets, the other decorated with two weary palms in cheap tin pots together with a faded sign explaining that a private chapel was available on the premises.

Keen went in and was greeted by a whiskery man of grayish complexion who was in unlaced shoes, a pair of greasy black trousers, and a shirt which was sadly in need of buttons

and a visit to the laundry.

"I'm from the Department of Justice," explained Keen, stretching the truth a little. "I'd like to talk to Mr. Dooling about this business last night. Can I see him somewhere alone?"

"I'm Dooling," the man said with a challenging curl of his lower lip. "It's a fine business whin a man can't even call a hearse his own, eh?"

"The whole thing was very unfortunate, of course. But you should consider yourself lucky. You might have been—well, pretty badly handled had you been here."

"But what can I get for all the inconvenience and the damage to my business. For nigh on forty year now I've been in business here, an' niver have I had a thing like this happen to me."

"I can appreciate the embarrassment," agreed Keen, thus winning the old guy at once. "Have you found the body of—of this Mr. Granville Hubbardstone?"

"Nary a trace of it," moaned the mortician leading the way into a small room on one side.

"As a matter of fact, Dooling, you never even *saw* the body of this Mr. Hubbardstone, did you?" said Keen closing the door.

The Irish undertaker sniffed, gulped—then accepted the expensive cigar Keen handed him. He sniffed it, lit it, and took a long pull before he answered: "No, as a matter of fact, mister, I niver did. You see, the body was brought here—with papers, of course—and I was simply ordered to put it on a train for someplace up in Massachusetts. I was to ship it this morning, as matter of fact."

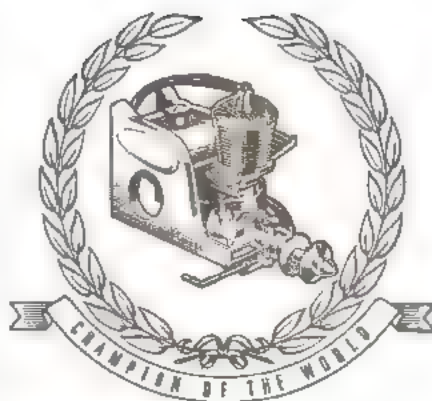
"Now we're getting somewhere," smiled Keen. "I'm afraid there *was* no Mr. Hubbardstone, Dooling. But that was not your fault. It was a trick to 'move' something—something outside the law."

"But where does that let me out?" cried the Irishman, sucking on the cigar again. "I face a lot of expense repairing that hearse up. She was banged up plenty."

"We'll see that all that'll be taken care of. But in the meantime I'd like to look over the store-room from which the casket was taken. First, though you will let me see those papers you refer to? You have them here?"

"They're right here in this file," Dooling grunted. And fumbled through a wad of papers for a minute or two, then brought out a medical certificate and a corpse movement order made out to one Eitel Haines and signed by a medical officer connected with one of the small New Jersey towns across the river.

"This is faked, of course, for it



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does not bear the town seal," said Keen. "But I'll take a copy, just to get the addresses and names. Do you mind?"

"Not at all. I niver noticed that there was no seal. We get these things all the time, and we seldom bother much about checkin' 'em. But say, I won't get in a jam for that, will I?"

"How can you? There was no body—you were just tricked into shipping a casket."

"But there was *something* inside. What was it, Mister? 'Snow'?"

"Hardly. That much cocaine would be worth a couple of million, I guess," smiled Keen. "We don't know what it was. That's just it—we'd like to find out."

Keen copied the details from the shipment papers and put the paper in his pocket. "Now let's take a look at that store-room of yours."

THEY got up and Dooling led the way back to a closed-off rear portion of the building. They entered through a small door and Keen recognized the usual morgue-type of room used by many undertakers. There was one long compartment with four small square doors, each bearing a number. He sensed that this was the "icebox" where bodies were kept prior to embalming.

Keen then noticed that a small side door led out to a tiny yard where several funereal-looking vehicles were near an open shed. From there he could see a covered driveway which evidently led to the street.

Dooling stood staring down the room, the cigar between his pudgy fingers sending up a trailing streamer of blue smoke.

"That's queer," he said.

"What?" asked Keen shifting his gaze to the back of the room.

"That casket—over there. The lid has been taken off!"

They walked over to where a pearl-gray casket stood on two saw-horses. The lid had been removed and stood on its edge near the wall. Dooling was a very puzzled man.

"What's wrong? Nothing missing, is there?" asked Kerry Keen.

Dooling went up to the casket, stared inside. The white satin was badly rumpled. The pillow was jammed up into one corner, and at the lower end the lining had been ripped from the sides and badly torn.

"Another corpse of yours has escaped, eh?" queried Keen.

"There's bin somebody lying in there," gulped Dooling. "Phwat the hell is this, anyway?"

Keen studied it all a minute, then kicked aside some severed cords that lay on the floor. Dooling, who did not see this move, was breaking into an-

other torrent of blasphemy.

"Look here," said Keen hurriedly. "Leave all this just as it is. I'll be back later. Don't touch anything!"

And with that he hurried out, passed through the shop, dashed out the front door to the car, and clambered in.

"So you found him, eh, Barney? Now get moving—to 55th Street."

Beside the Mick chauffeur sat Drury Lang, a weary-eyed devil with a day's growth of whisker on his chin! His lips were dirty and slobbered. He was rubbing his wrists which were almost raw.

"Found him snoozing in a casket, of all places," growled Barney letting in the clutch.

Lang did not speak. He was plainly exhausted, and he lay back while Keen found a flask in the door of the car and placed it to his lips.

"A little O'Doul's Dew ought to make him talk," grinned Barney, turning into Eighth Avenue.

"I'll talk . . . I'll talk," gasped Lang. "And I'll ask you guys how . . . how the hell you knew I was there."

"You talk too much, Lang," warned Keen. "And now we're going to turn you in! You're wanted for murder!"

"Murder!" gasped the detective.

"That's it. Now lay back and keep quiet. Maybe we can get you out of it—but I certainly doubt it."

"MURDER?" screamed Lang.

"Sure! Your gun killed a man named Regan Hatcher. I checked the bullets. They found him lying in 38th Street last night."

"But I was tied up . . . all last night in . . . in that box."

"Sure . . . Sure," said Barney out of the corner of his mouth. "But how you gonner prove it?"

"Fer cripe's sake! Didn't you just come in there and get me out?" Lang gurgled, reaching for Keen's flask.

"What of it?" both Keen and Barney barked together.

The bewildered detective turned his head slowly from one to the other: "But you're ribbing me," he finally said in a pathetic tone.

"Wait until you see the papers," taunted Keen, his eyes steely.

"It'll be the hot squat for you, Lang. It's about time they got some of you gun-toting coppers," added Barney.

"But you just pulled me out of a box back there."

"That's right. But we don't know how long you were there, do we?" Keen went on.

"Good Lord!" gasped Lang.

"You said it," added Barney.

"ALL right, Lang," said Keen after they had smuggled the Department of Justice man up to

Keen's penthouse apartment and made him reasonably comfortable. "Now let's get it all straight."

"We can do with a nice chunk of reward money," taunted Barney.

"And there's two ways to get it," cracked Keen. "One is to turn you in."

"What's the other?" Lang almost whimpered.

"Scott was telling us something about a stolen anti-aircraft gun . . . or something."

"Yeah. That was what I was working on when they biffed me."

"Okay, let's have the details. Maybe we'll be able to recover the A-A gun, or whatever it is," Keen said smiling.

"Well," said Drury, "I was trailing this guy Hatcher—the guy you say is murdered."

"With your gun!" Keen broke in.

"I don't know about that. Anyway, Hatcher had been some kind of a writer on military affairs. He had been trying for weeks to get inside at Aberdeen to see this new A-A development. But he was always chucked out. They were suspicious of him, you see."

Keen nodded and took a drink from the tray presented by Barney.

"So," Lang went on, "when an important part of this new gun business was swiped while it was being moved from the Ordnance Department in Washington, they immediately thought of this guy Hatcher. And I was ordered to tail him."

"And wound up in a nice clean casket," jibed Barney.

"Well . . . yeah. Anyhow, I tailed Hatcher to Dooling's dump—and walked straight into a mob of guys swiping a hearse. They biffed me around plenty, then tied me up, gagged me, and tucked me away in that wooden overcoat. I guess they figured I'd be quiet for some time."

"They took your gun?"

"I guess so. I know I don't have it now. But they did leave the lid reasonably loose so that I could get some air, otherwise I'd never be alive to tell the tale."

"What do you know about this Hatcher?" asked Keen.

"Very little. He has been a military writer, all right. But he turned nose-ey and went into the business of selling armament secrets."

"Where does he live?"

"But you said he was *dead*!" bel-lowed Lang.

"All right, then—where *did* he live?"

"He was a floater. One place he hung his hat was over in Hoboken with some German people. Then he had another place over here in the New Century Hotel. That's where I picked him up—his trail, that is."

"All right. But what do you *really*







"You mean to say that we're going to take off this afternoon?" demanded Barney unbelieving.

"We are," said Keen, darting through the door and into the kitchen of the house. "Get moving. In this fog we can get away without being seen."

"We're both nuts," said Barney. But he got out, closed the garage doors, and hurried to the underground hangar that housed the Black Bullet.

In five minutes they were ready. All damage to the ship had been repaired the night before by the indefatigable Barney, who never went to bed until the sky charger was ready for business again. They opened the great doors and Keen ran the ship out into the yellow mist.

The wings were opened and locked in place, then the rock garden doors were closed. Barney now settled down in his cockpit while Keen let the plane roll gently down into the water. Once off shore, he set the pontoons for a take-off and let the silenced Avia move the craft into the clear beyond the boathouse.

After a last glance around, Keen opened the engine and let the Black Bullet hurtle up into the blank wall of fog that hung out over the Atlantic.

"You keep your set tuned to the night airline frequency, Mick," he said over his shoulder when they attained the 3,000-foot level. "And keep listening for a call for a bird by the name of Schlessor from someone using the name Blackie Berndorff, Mike Farrow, or Granville."

"Where'd you get those names?"

"Out of that wrecked Sikorsky. They leave things around like that. It's a chance anyway, so we'll give it a whirl. In the meantime, I'll be looking for that Newark beam. Now keep your ears open—and don't switch to Amos an' Andy!"

Keen now settled back to fly on instruments, plugging in his headphones meanwhile on the beam set. He first picked up the "A" signal of the quadrant, then swung over farther toward the east until the signal merged into a single tone and he knew he was dead on the northeast leg of the Newark beam. He had figured that the men who had stolen the airliner would hug that signal all the way out to sea. It was evident that they were taking one long chance to make their get-away—and in doing so had shown part of their hand. They were attempting to contact someone!

"Flyers who know enough about a Douglas to take it off that way," muttered Keen to himself, "know enough not to try to land it in soup like this. Very likely they have reports that weather conditions were better somewhere out at sea."

He sat tight, listening carefully to maintain his position on the beam. He knew the stolen airliner had a big start on him, but that might not mean anything. He was hoping that the thieving flyers would have difficulty in making whatever contact they had in mind. He now sensed, however, that the weather was even worse than the radio announcement had intimated.

Barney sat behind him with the dumb expression of a haunted sheep. He stared mournfully at the Western Electric set bolted into a wall panel and listened to the dull terminology of the airlines. Then suddenly he reached forward and moved the wave-length lever up the band to the day frequency of 5.5 megs. Then he glanced toward Keen with a guilty expression.

Like a shot, the first tell-tale words of a poignant sentence came from the set:

... calling Farrow ... calling Farrow ... Bretagne.

Barney stiffened, listened again. Yes, whoever was calling was operating on the airline day frequency!

"Hey, who is 'Bretagne', or 'Brettain'?" Barney bellowed at Keen.

"'Bretain'? I don't know. What is it?"

"This guy 'Bretain' is calling a bird by the name of Farrow. But wait a minute—"

Barney listened again, caught:

Schlessor on Bretagne calling Farrow ... Schlessor calling Farrow. Come on in, Farrow.

Barney quickly relayed the news to Keen.

"Schlessor? Yes, that's the guy. But what is 'Bretain'?" the puzzled ballistic expert queried.

Barney listened again and heard the message repeated.

Keen pondered on it all then suddenly slapped Barney on the shoulder.

"Fake a call number—any call number—and contact the Nantucket Lightship. She has a radio-beacon and can get a cross-bearing on that call through the Pollock Rip Light. Make it snappy!"

Barney flipped the transmitter switch, put through the message. He made the contact within a few minutes.

"Hello, Nantucket," he called, "can you get me a bearing on signal coming through on 5.5 megacycles? Operator named Schlessor is calling someone named Farrow."

The unsuspecting Nantucket operator accepted the message without question and said he'd call back.

Barney nodded to Keen, turned the set back to "Receiving," again listened to the calls of the man named Schlessor.

Then suddenly in response came a wailing cry:

Calling Bretagne ... Farrow calling Bretagne. Hurry, Schlessor. We're running out of petrol!

A frantic answer followed:

Get through! Get through! Someone's trying to get our bearings through Nantucket. Get through, somehow, Farrow. Where are you?

The frenzied reply to this was:

About four miles from your position, at 6,000 feet. We've been waiting hours up here for you.

And then Barney caught their message from the lightship:

Nantucket calling W2AID ... calling W2AID ... Position of call was 41:36:15 North by 68:12:22 West. Got it?

Barney repeated the message and thanked the Nantucket operator. Then he handed the scribbled bearing up to Keen.

Keen took it and nodded. They apparently were somewhere near the Douglas, so there was no time to ask for a bearing on their own position. Moreover, the flyers on the airliner had stated they were within four miles of their contact base, whatever it was.

THEN something suddenly swooshed past the Black Bullet. And both Keen and Barney ducked low in their cockpit, barking the same words:

"The Douglas!"

Immediately, Keen set his nose after the dim shadow and fired a few desultory bursts.

"Keep on that set and listen closely!" he bawled to Barney.

For several minutes they chased madly through the murk. And at times the flailing prop of the Black Bullet seemed virtually to be fanning the great tail of the Douglas.

Keen watched his altimeter which was dropping fast now. The Douglas was going down onto the sea to contact with something which, according to Barney, was called 'Bretain.'

"'Bretain' ... 'Bretain'?" muttered Keen, holding the Black Bullet dead on the misty shadow of the Douglas. "Now I get it," he suddenly cracked. "That must be that French Loire long-distance flying boat—the Bretagne! It was supposed to have been lost last year on the South Atlantic run. That's it, the Bretagne! They've swiped it to contact this guy Farrow, whoever he is. And they're going to try a water crack-up landing with the Douglas to make the change. Smart stuff—if they get away with it!"

Keen kept watching the eerie shadow of the Douglas, his eye on the altimeter. The airliner was in a slow glide now, and the outline of its



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wings took on a heavier silhouette. They now had the flaps down.

The needle of the altimeter dropped lower and lower. Keen rammed the steel lever forward, put his retractable pontoons down. Then, as the murky waves began to appear through the swirling mist, he opened fire with his Darns and Chatelleraults!

The Douglas went straight on for what seemed minutes before anything happened. But then Keen gave her another heavy burst, and this time she rolled badly, dipped a wing, momentarily righted herself with a jerk—then plunged nose first into the water!

There was a dull thud and a great wall of water and spray was thrown in the air. One of the ill-fated ship's engines canted hard, went swirling up in a crazy arc, then fell back near the wing-tip. The tail of the airliner now came up, hesitated a minute, then flopped back into the sea.

"Get up on your feet and get a gun ready," Keen yelled to Barney.

Then curling around in a tight circle, he brought the Black Bullet around and managed to put her down gently on the water. He watched closely all around him as he churned the amphibian up to the wreckage of the Douglas upon which there were no signs of life.

But just as he was about to ease the Bullet up, the sound of gunfire came from across the water. They both turned, saw emerging from the mist the long silver prow of a great flying boat.

"Give it to them, you dumb Mick!" bawled Keen.

Another burst of fire crackled across the water from a gun mounted in the control cabin of the huge Loire.

Barney answered with a well-aimed burst from his Brownings that silenced the fire at once. There was a jangle of glass and the low scream of a man. The engines of the big flying boat then opened up. She churned forward with a roar and passed close to the wreckage of the Douglas. Barney gave them another burst as a send-off, but it was hardly needed, for it was apparent that the Loire had had enough.

As soon as the big flying boat had cleared, Keen was out on the wing of the Black Bullet and throwing a grappling iron toward the wreckage of the Douglas. He caught a battered cabin window and drew the Black Bullet in close. Then with a quick movement, he was over the leading edge, down on the pontoon, and across to the back of the Douglas. Barney watched for a few minutes, then gave a low cheer when Keen emerged with a fairly large package tightly wrapped in stitched burlap.

## FLYING ACES

Keen shoved the ungainly package over the wing, and the Mick took one end and guided it into the cockpit. In no time at all, it was stowed away, whereupon Keen went back for a further check-up of the wreckage. He returned in a few minutes dripping wet, for the wreckage was sinking fast now. He had found that the men aboard the Douglas had been killed in the terrific crash.

Then he loosened the line, shoved the Black Bullet clear, and taxied away just as the once-sleek Douglas plunged beneath the surface with her cargo of death.

Without taking a second look, Barney huddled down under the covered cockpit and let Keen take the Black Bullet off. The clock on the instrument board read 8:15 p.m.

Keen made a quick calculation, climbed her fast, and leveled off. They were on their way home!

**E**XACTLY forty minutes later, Keen picked up the first dull gleam of Montauk Light. He had to boggan in on the Newark beam until he caught the dull glare of Fire Island Light, then he had turned north again, cut in his Skoda mufflers, and groped his way up the shore of Long Island. Finally, he identified a marker buoy, and with a grin back at Barney, he eased the Black Bullet down. The fog and mist were still as thick as ever, but by skillful use of his aviation instruments he had brought the speedy amphibian back to her secret hangar.

They quickly ran her up on the shore inside, whereupon Keen hoisted out the long burlap-wrapped bundle and placed it beside the one they had taken from the wreckage of the Sikorsky.

"Nice gun shooting, Barney," said Keen as he slipped out of his black coverall.

"Nice sky-bootin' bringing th' Black Bullet through that fog," answered O'Dare. "Why even the sea gulls musta been walking tonight!"

"Yeah," laughed Keen. "And now get into your street togs and load this stuff aboard the Dusenbury. We're going to raise a corpse—for the benefit of one Drury Lang. But we'll have to work fast."

In fifteen minutes they were racing back to New York with the two mysterious bundles in the rumble seat. Again the trip took nearly two hours, but instead of heading for 55th Street they crawled through the midtown traffic to 38th Street.

Though it was after 11 p.m., there was still a dull gleam of light in Dooling's small office, so Keen barged right up and rang the bell. Dooling was sleepy-eyed when he let them

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into his drab establishment.

"Well, I'm back," said Keen. "And now may I have your assistance for a few minutes?" he queried, laying two crisp one hundred dollar bills down on the dreary wicker table to emphasize his request.

"You are a Secret Service man, aren't you?" old Dooling quaked.

"Pick up the money and leave the rest to me," came the reply. "If you don't trust me, you can call this number—headquarters of the New York Division—but I'd rather you didn't. I've got to work fast."

"I guess I understand," nodded Dooling.

"Fine! But remember that this is very important, hence you must keep your mouth shut. We are working to trap a gang of international spies who have been trying to obtain possession of an important military secret. You can understand now that I am being very confidential with you."

Dooling was highly impressed. He folded the crisp bills with enthusiasm, nodded like an automatic doll.

"Now first," said Keen, "we want your hearse together with that casket we were examining when I was here before—the one with the lid off."

"Ye can have anything, sir—anything if it'll help get them dommed spies!"

"All right. We'll take the casket out and place it in the hearse now. Then your part is done. The rest will be carried out by my assistant," he added, indicating Barney.

The three of them then went in the back, lugged the disarranged casket out, and placed it in the hearse. The lid was left off.

"That's all," explained Keen. "Now you and I will go back into your office and smoke a cigar. Pulski here will take care of the rest of the business."

"Pulski?" gasped Dooling. "I

thought he was a County Cork man by the look of his mug. But ye niver can tell, huh?"

"No, you never can tell," agreed Keen as he walked away with the little mortician. He gave Barney the wink and the Mick went out to the Dusenbergs.

"Now, Dooling," explained Keen. "Your hearse will be brought back early tomorrow morning. And remember that you know nothing about this regardless of who questions you."

Dooling nodded, smiled, and sucked on the big cigar Keen had just given him.

"For one thing, a fussy guy named Lang will no doubt drop in. He'll ask a few dumb questions—but you can pass them off. He's only a half-pint operator who's trying to get along. Your story is that the hearse was taken again last night, and that you don't know anything about how it happened."

"But my hearse—it will come back?" Dooling asked.

"Positively! I'll see to that. If they are not here with it by 10 a.m., report the loss to the police in the regular way just to cover up."

"I get you, Mister . . . Mister . . ."

"Ginsberg," filled in Keen. Then he winked, and Dooling winked back.

Now they heard the hearse rumble out through the driveway, and Keen got up to leave.

"Remember now," he warned, "you're not only doing me a big favor—but you are being an honest citizen who is helping the cause of law and order."

"That's me ivery time, Mr. Ginsberg," assured Dooling as Keen joined Barney on the front seat of the hearse.

IT was a well-satisfied pair of "operators" that let themselves into Keen's pent-house apartment twenty minutes later. They had left the hearse a short distance up the street from the canopied entrance of the building and then went upstairs together—after Keen had had a confidential word with the doorkeeper.

They found Lang was huddled up on the couch with a silk comfortable around his shoulders. He jerked into a sitting position with a start when Keen and Barney came in.

"What happened?" he cracked, obviously worried.

"Nothing. The Graham car got away—clean," explained Keen, sitting down with a feigned gesture of weariness.

"I bin listening on the radio—news flashes on it. I guess we're sunk."

"You mean you are," said Barney.

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"Still, it may only be a life sentence."

Lang shoved his fingers through his stringy hair. "I'm gonner give myself up," he said. "They can't plant all this on me."

"If you could only prove that Hatcher was at the bottom of that anti-aircraft gun business and then get the A-A gun gadget back, you might get away with it," mused Keen, staring at the ceiling.

"That's what you birds were gonner do for me—and what happens?"

"We did our best. We wanted the reward money on that gun, you know."

"Yeah? An' I'd have got it for you, too."

"How?" said Keen looking at his watch.

"It can be done, you know."

"I don't believe you. I'll bet if that thing was laid in your lap right now, you'd grab it, take all the credit, and hang onto the dough yourself," Barney broke in.

"How can I? I'm a G-man. I can't take rewards."

"No. And neither could you see that we got it," Keen went on with another look at his watch.

"I'd like the opportunity to try," snapped Lang. "Just give me the opportunity. I can tell a good story, you know—if I get the chance."

At that instant the house phone rang.

Keen arose, took up the receiver. "Lang?" he cracked into the mouthpiece. "Drury Lang . . . ?"

"Don't give me away, Keen," Lang pleaded.

"Yes," went on Keen. "Yes, he's here. But how did you know . . . What's that? . . . Why it sounds like a practical joke."

Lang was on his feet now, and Barney stood with his mouth open, a glass in one hand, a bottle in the other.

"Right. We'll be down immediately," Keen said, and then he hung up. "Here's a pippin," he explained. "Someone has just left a *hearse* downstairs for you, Lang. The doorman took the message and just called 'np.'"

"Somebody's trying to pull a fast one on me," bellowed Lang.

Keen was climbing into his overcoat again: "I don't care what you think," he said. "I'm going downstairs."

Lang stood by dumbly, whereupon Barney joined the excitement and went for his coat.

"Come on, Lang," Keen said. "You have nothing to lose. Apparently, the fact that you're here is no secret any more."

Finally Lang gave a weary wag of his head and followed them to the elevator. They went downstairs and

found the doorman reading an early morning edition of a tabloid.

"Yeah," he explained with little interest. "He just left. Said his name was Ginsberg and that he didn't know what the hell you wanted with a hearse, but there it was, and will you see that the guy gets it back in the morning?"

"Come on," cried Keen. "This is a beaut!" And they hurried out and made their way to the hearse.

Lang immediately clambered into the seat and stared around dumbly. "I get it," he said with an air of resignation. "Here it is!" And from the slit between the horn button and the top of the steering wheel, he took out a card. On the pasteboard in neat black letters was printed *The Griffon*.

"How do you like that!" gasped Barney.

"Let's look in the back of this bus," said Keen.

"I know," growled Lang. "We'll see that Douglas airliner inside this stiff wagon. Do you know any more funny jokes, Keen?"

"Wait a minute, Lang. This is the same hearse that Hatcher had. You're not going to plant this on me," Keen snapped, getting down. "We try to help you out, we worked all day at Newark, we try to trace Hatcher's gang—and you try to plant this on me. All right, then," Keen added. "I'll drive it down to John Scott and tell him the whole story. Come on, Barney, we'll give it a whirl."

"Wait a minute! Wait a minute!" said Lang quickly. "Let's have a look and see what's in back there."

"I knew you'd see it our way," Keen said with a growl. "I'll bet there's a tie-up here with the A-A case—and you'll claim the reward now, I suppose."

"Listen, Keen. If there's anything to this, I'll see that you get what's coming to you. But I still think it's a rib!"

**BARNEY** had the rear doors open by now. He let out a gasp: "Sure, an' it's another corpse!"

Keen shoved him away, drew the casket partly out of the interior. "You open it, Lang."

Lang gave Keen another puzzled look. He figured he was caught now, but he was not quite sure how. He climbed inside and began to twist the bronzed thumb-screws until the lid was free. Then he looked inside and found a long canvas-wrapped bundle together with a wooden crate bound with steel straps. He peered at them for a moment, then let out a low whistle.

"Put that lid back on, Keen. I'm getting out of here," he said in a husky voice.

"What is it?" gagged Barney, "a

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1 10x1/10	PROPELLER	WHEELS per gr.
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1 10x3/16	1 1/2x 1/2x 1/2	1 1/2x 1/2x 1/2
1 10x1/4	1 1/2x 1/2x 1/2	1 1/2x 1/2x 1/2
1 10x1/2	1 1/2x 1/2x 1/2	1 1/2x 1/2x 1/2
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him off? That's the part I can't figure out!"

"Because they knew Hatcher had been in contact with me; but they didn't know why, because apparently Hatcher was saving that cartridge detail part for himself."

"They thought he was double-crossing them?" asked Barney.

"Of course. Then the coffin gag was pulled to hide the gun part for a few hours in Dooling's place. They had no particular idea of sending it to Massachusetts. That part of their plan was just a stall; until the time came for them to get the part out to that flying boat."

"You mean, they were not going to take it to Massachusetts?"

"Oh, they could have done so, of course, and then picked it up with the proper papers and brought it back here again. But as you've just said, they figured Hatcher was double-crossing them, so they bumped him off, took the gun part, and left a scene that looked as though Drury Lang had killed a hearse driver and swiped a body."

"Poor old Lang. He'll be months getting over this," laughed the Mick. Keen went on:

"Then, as you know, Lang got caught. He followed Hatcher and his mob to Dooling's and they nailed him, not knowing what to do with him, they tied him up and stuffed him in a convenient casket. Then Hatcher, supreme in his belief that all was clear, drove off. The rest of the gang then hopped into that Graham, cut him off a block or two away, bumped him off,

and took the gun part out of the casket. I have an idea Hatcher was simply moving it to a place where they could quickly transfer it to the plane they intended to steal at Newark airport. But, of course, he never got out of 38th Street. Another reason for doing away with him was to grab his share of dough for themselves. Incidentally, Lang hadn't let on who he was when he was caught by the gang. A good agent never does—and this time Lang was good. So Hatcher was still worried about Lang even after they'd put him in the casket, for he didn't know it was Lang they'd caught. And Hatcher didn't recognize the Graham when he was hi-jacked because of the poor visibility that night."

"Then the casket gag was only pulled to hide the gun part for a few hours when they sensed that either you or Lang were really on their trail?" asked Barney.

"That's right and it was a swell idea, too. Who would have thought of looking in a casket for that gadget? We might have nailed Hatcher and his mob—but we would never have found the part, even though they went to jail. They would have tipped some one else off to pick up the coffin in Massachusetts, and that is all there would have been to it."

"I think I'll mix you another toddy. That yarn is worth it," said Barney getting up and taking Keen's glass. "That casket gag even had me fooled."

"Make it a double-grog, Barney," came back Keen.

## The Market Log

(Continued from page 59)

structed of special alloy iron, the former being cast in one piece and the latter fitted by micro-lapping to the cylinder without rings.

The power plant is fitted with a tubular steel wrist pin and aluminum alloy connecting rod. The one-piece crankshaft, precision-machined, is of chrome molybdenum forging, and the crankcase and rear cover are of cast aluminum alloy.

The coil and condenser operate on three volts. A simply designed mixing valve enables precise adjustment for all operating conditions. Completely assembled, the unit sells for \$16.50.

Venice Model Shop, 1346 Washington Blvd. Venice, Cal. Designed by Clyde Goehring, the Goehring "27" is this company's latest addition to the gas model airplane field. The "27" may be powered with any 1/5 to 1/6 h.p. engine, weighs 3 1/4 lbs. without the motor, and it has a 7 1/2 ft. wing span. It is a composite of the best

features of twenty time-tested models.

The complete kit contains full size plans as well as cutout ribs and streamlined pneumatic wheels. The model is covered with glider fabric, and all wire parts are made of the strongest steel wire. An ample supply of cement, dope, and all other construction materials are furnished with the kit. Retail price of the kit is \$10.00.

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COLT



the East and review its contributions of the month:

Polk's Model Craft Hobbies Inc., 421 Seventh Avenue, New York City. With electric razors rapidly coming into fashion, model builders have been wondering what they will do when their most important tool—the common razor blade—becomes as scarce as prehistoric fossils. But Polk's seem to have solved this important problem. For they have completed and placed on the market a new razor knife-set that seems to be the solution to the model builders.

Known as the Xacto Knife Set, this useful product will serve the builder even better than the now rapidly vanishing razor blade. The set is designed in two units. Unit No. 1 consists of a handle and six small blades, while Unit No. 2 comprises a larger handle and six larger blades designed for heavy duty. Each blade

and each handle sells for ten cents. Deluxe sets that consist of six blades and a bakelite handle retail at \$1.00 per set. Blades are of surgical steel.

Among the many engines featured by Polk, the Condor Midget Motor is their latest addition. The Condor Midget develops up to  $\frac{1}{8}$  h.p., has a  $\frac{9}{16}$ " bore and a  $\frac{9}{16}$ " stroke. It is  $3\frac{3}{8}$ " high and weighs  $3\frac{3}{4}$  ozs. empty. The motor can easily be inverted. A built-in carburetor filter insures constant dependability during operation.

The engine is designed for speeds of 500 to 15,000 r.p.m.

—NICK LIMBER

(When you write to the dealers for further facts on any of the merchandise mentioned in this department, it is suggested that you say in your letters, "I read about it in the 'Market Log' in FLYING ACES Magazine."—Editor.)

## Modelers' News

(Continued from page 39)

ber. There has also developed a city-wide interest in this modern hobby.

William P. Beck, Q.C.G.M.A.C. member who furnished us with this news, states that his club has learned that any up-to-date newspaper will gladly feature the activities of a live model club. But the editors have to know about your programs before they can print the news and the surest way for them to find out is for you to tell them of your plans far enough in advance of the proposed event that they can figure on giving you space.

### STATEN ISLAND SHOW

A CROWD estimated at more than 6,000 gathered at Miller Field, S.I., N.Y., recently, to watch the first model air show of the Richmond Model Flying Club of Staten Island. The program started at 10.00 A.M., and it was still going strong when darkness finally called a halt.

Contestants came from several places in the East, with members of a Philadelphia club rolling onto the scene aboard a neat trailer. Most of the prizes, however, were captured by the home entrants, with Martin Rohner, vice president of the Richmond club winning an attractive silver trophy. His prize entry was a cabin monoplane, *Miss Staten Island*.

Excellent publicity was given the meet by the *Staten Island Advance*.

## New Aero Text

(Continued from page 33)

port pilot licenses—or "competency certificates," as they now call 'em. Anyhow, the book is so complete that those who master its knowledge should have little difficulty in passing the written tests that the government springs on those who are after air ratings.

Included in the text is complete information on the theory of flight, on construction and operation of all types of heavier-than-air planes, on the principles of aircraft engines, and on flight instruments, aviation instruments, meteorological equipment, and safety appliances.

That portion of the book devoted to the principles of meteorology is particularly good, since it amply explains the general wind systems, pressure gradients, and wind origins at high altitudes. Moreover, full information is given on modern weather reporting and the interpretation of the weather map.

Special credit is due Lusk for hav-

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NOT a day passes but that we receive a flock of letters from readers not only praising FLYING ACES to the skies, but expressing their appreciation of these fine free premiums, pictured above. And they are both beauties—the ring, finished in antique silver, is self-adjustable and guaranteed to fit, while the bracelet is equally attractive.

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Robber Band—two extra sets to fit 1/2" and 3/4" wheels. Operates on Carbine, Dry Ice and Water. R.P.M. 3000. No machining to be done. Starts instantly, runs smoothly, economically and powerfully.

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1582 P-3 LINCOLN PLACE, BROOKLYN, N. Y.

### New True Scale Ornamental Models

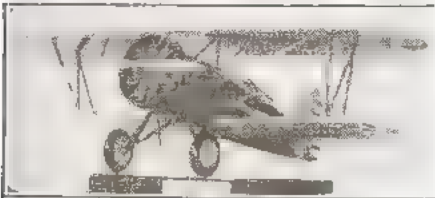


Photo of a built model shown to the right of the page. The model is a biplane with a single engine and a tail fin. It is shown in a side profile view. The text below the photo lists various models and their prices.

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Quality Model Aircraft & Novelties  
**SCHULENBURG TEXAS**

## Ignition Specialties



**STANDARD COIL** used on the leading engines made today. Improved with clip connector to fit spark-plug and high-voltage wire. A quality product throughout. **\$2.50**

**BIG SHOT** Ignition coil made for larger ships, boat engines, etc. Suitable for high-compression engines with speeds up to 20,000 R.P.M. All lead wires fastened with approved terminals. Weight 5 1/2 ounces. **\$3.50**



**IGNITION CONDENSER** made for airplanes especially. Flexible stranded connections. Tubular aluminum case. Side bracket for mounting. **85c**

**TUNGSTEN POINTS** for your breaker system. Diameter 1/8 inch. Set consisting of one rivet type and one screw type with nuts size 8-48 and fibre washers 40c

**FLIGHT TIMER** for controlling your time of flight from 0 to 60 seconds inclusive. Weight 2 1/4 ounces. Used as ON-OFF switch also with silver contacts. Rugged. Vibration-proof. Accurate. Easy mounted. A necessity for the finals. Available in 2 minute period also. **\$3.00**



**NATHAN R. SMITH**

1816 W. 8th St., Los Angeles, Calif.

Judson Marsden of Pacific Beach, Calif. Jud was told to take his pick of anything on the trophy table—and he picked up fifty bucks and the first place trophy. The second place man took his pick of what was left, and so on down the line until everything was gone. We did not have one complaint about prizes—which is a record of some kind!

We started our Association without a cent, and we never will have much—for as soon as we build up the bank roll it is time for another contest. And that leaves us nearly broke. We usually give away eighty dollars in cash, and the cost of printing tickets, window signs, entry blanks, and general incidentals, brings the total expense to around one hundred and fifty dollars or even more.

Getting suitable publicity is perhaps the toughest job we have had. In the past, the newspapers and newsreels have claimed that pictures of crackups were the only shots "of public interest" that they could find in our activities. For the newspapers, that might be swell. But for the modelers, it is all wrong. The reader gets the impression that these gas ships always crash—and what's the use of getting into a hobby where you're always putting in time and money on repair work?

Complete crackups, as a matter of fact, are most unusual on our airport. And the newspapers are now beginning to find that out and give us the kind of break we've been wanting. We've recently been able to convince

them that our object is to improve model flying. And the public is now beginning to realize that our gas models will do almost anything that the big ships can do—except carry passengers.

So we're finding friends among the newspapers here, and they use a good deal of the material that we send to them. And oftentimes some of their men will drop out to the field. Newspapers are always glad to receive tips from you, too, concerning special days and events. And keep them posted on all of your activities if you want your town to become interested in the club.

Right here, by the way, I want to mention Ellwood Chandlee, of the Los Angeles Examiner. He's been highly cooperative with us, and we've had lots of good publicity through him in the Junior Birdmen section. Chandlee is an old-time modeler himself.

And now, in reading over this material, I believe I have told about everything of interest concerning the operation of the Gas Model Airplane Association of Southern California. Perhaps not all of these ideas of ours could be used in your particular group. But they are the features that have put our outfit across and have given its members something they can really enjoy. Try out some of them.

But in trying them, remember this—a live gas model club can't be a one-man organization. *Every member must cooperate!* And that's the main secret of our success.

## Flying Aces Club News

(Continued from page 36)

me most were, of course, the monuments to World War aviation heroes and the airdromes. France, you know, was one of the first nations to adopt flying, and they have a remarkable Air Corps and many fine public and private airlines.

"Among the historical places made famous by aviation, I saw the Somme River Valley, where many flyers lost their lives during the German drive on Amiens. And I saw the Toul sector, where one of the greatest air battles of the War was fought. I also saw the place where Baron von Richthofen was shot down—a small marker is there in memory of the great

sky fighter! And I saw, on the fields where the Meuse-Argonne drive took place, the point above which Captain Charles P. Moseley—a war flyer who lives just five minutes' walk from my home—became an Ace.

"Also, I visited many of the places made famous by the Lafayette Escadrille, the outfit organized by Lieutenant Norman J. Prince, who was killed in action."

Well, "me hearties," that's all the space we can spare for Bill's fine report. Perhaps we can allow a little more in a later issue for his swell dope on modern commercial aviation in Europe. Happy landings!

## How Japan Might Attack America

(Continued from page 21)

tected high tension lines carrying electric power to Los Angeles from Boulder Dam.

But while all this would be something of a national calamity, it would

be nothing compared to the *real* thrust which could be carried out from the north at the same time. In other words, the Hawaii-to-California thrust would only be a smoke



screen for the important attack by way of Alaska.

**T**AKE another look at our cover painting and you'll see what we mean. In the northwest corner you will see the chain of aforementioned Kuriles—the northern-most islands in red—which act as giant stepping stones for a move toward our Aleutians and Dutch Harbor. If Japan really snared our main defensive forces into watching the advance by way of Guam, Hawaii, and across the South Pacific, Japan's main attacking force could move in comparative safety and with great swiftness to Alaska. Then, after setting up bases at Dutch Harbor and Anchorage, the Nipponese could proceed down the coast and take over Sitka, which offers perfect geographical conditions for air operations against Seattle, where many of our finest aircraft factories are to be found. Portland could be the next target.

The Nipponese naval chain could then swing on down to make a complete tie-up offering temporary bases for aircraft and for the servicing of their lighter surface craft.

Meanwhile, the United States fleet, having spent much of its energy attempting to block off the thrust from the south, would have to switch its plans, steam a distance of approximately 3,000 miles, and try to halt the move from the north. Whatever happens, it is highly possible that a landing would be forced by the Japanese at one end or the other of our West Coast.

The conclusion here is that the United States *can* be invaded. And once an invader puts foot on our mainland, it will take months and considerable expense and bloodshed to blast him out.

In other words, then, our geographical position does not make us as secure as is commonly believed. The striking modern speeds of aircraft, of aircraft carriers, and of capital battleships, have given the question a decidedly new complexion.

A successful air raid on San Francisco alone would wipe out the Army Air Base at Alameda and the seaplane ramp now used by the trans-Pacific clippers. The Mare Island Navy Yard would be crippled in no time. Hamilton Field, the Golden Gate bridge and the Army air base at Crissy Field would naturally come in for their share of the attack. The destruction of the Golden Gate bridge and the new Oakland bridge might bottle up numerous U.S. naval vessels in the port of San Francisco.

All this is not pure imagination, for military strategists all over the world have seen this problem and have commented on its possibilities.

Indeed, the details of these moves have been published in military and naval journals everywhere. We can't ignore the fact that the Japanese strategists have made the most of the scheme.

Today, Japan is a great sea power. She has a Navy considered among the first three. Her Army is now at its peak, and she has an air service which could certainly do its share in the series of maneuvers just described.

While few know it, Japan has a number of long distance flying boats. They are the Navy 90-1 six-place flying boats built at the Japanese Royal Aircraft Factory located in the Hiro Naval Yard. This plane is featured in our cover painting.

Strange as it may seem, the Japanese have been using this deep-hulled type of craft since about 1931. But it was not until 1933 when one such ship crashed, that the rest of the world knew that such a plane existed. The most recent 90-1 models are powered with three 700 h.p. Japanese-built Hispano-Suiza engines.

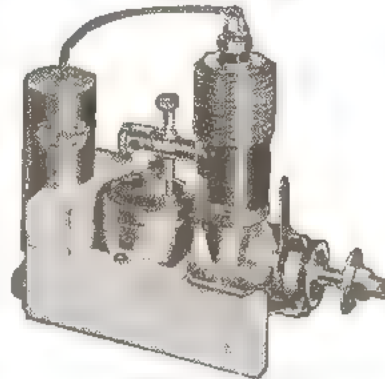
Fully loaded, the plane weighs 26,880 lbs. and has a top speed of 136 m.p.h. These last figures are presented with tongue in cheek, however, for they are those given out by the Japanese government. Frankly, we believe it does much better than 136 m.p.h., because the French Loire 70, a similar craft using but three 550 h.p. engines, does 135.

**T**HIS, then, is the story of what might happen should Japan decide to attack the United States. Whether she has the money to finance



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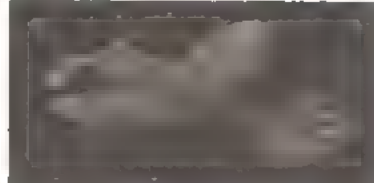
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1, 16x1/16 100, 5c	All Col. doz. 19c 2 for	1c
1, 16x 35 for 5c	Silver 1/2 doz. 5c	PAUL-O-WINA
1, 16x 16, 18 5c	Sup. 1/2 doz. 5c	5 1/2. 10c add 5c
1, 6x 4 15 for 5c	WHEELS per pr.	par in. up to 10"
1, 6x 1/2 5 for 5c	Brok Bala Cals	1/2 doz. 10c
1, 32x3 32 30 4c	1/2 .01 .03	Machins Props
1, 32x 30 10 for 5c	1/2 .02 .04 .05	5" 4c
1, 32x 15 2 for 5c	1/2 .03 .05 .07	(Add 1c per
1, 32x 10 1 for 5c	1/2 .04 .06 .10	inch up to 10")
1, 32x 8 8 for 5c	1/2 .07 .15 .20	THRUST
1, 32x 6 6 for 5c	1/2 .15 .20 .25	BEARINGS 1c
1, 32x 4 4 for 5c	1/2 .20 .25 .30	BUSHINGS 3c
1, 32x 2 2 for 5c	1/2 .30 .35 .40	DOZ.
1, 32x 1 1 for 5c	1/2 .40 .45 .50	ALUMINUM
1, 32x 1/2 1/2 for 5c	1/2 .50 .55 .60	WHEELS
1, 32x 1/4 1/4 for 5c	1/2 .60 .65 .70	1/2 doz. 11c
1, 32x 1/8 1/8 for 5c	1/2 .70 .75 .80	1/2 doz. 14c
1, 32x 1/16 1/16 for 5c	1/2 .80 .85 .90	1/2 doz. 17c
1, 32x 1/32 1/32 for 5c	1/2 .90 .95 1.00	1/2 doz. 20c
1, 32x 1/64 1/64 for 5c	1/2 1.00 1.05 1.10	1/2 doz. 25c
1, 32x 1/128 1/128 for 5c	1/2 1.10 1.15 1.20	1/2 doz. 30c
1, 32x 1/256 1/256 for 5c	1/2 1.20 1.25 1.30	1/2 doz. 35c
1, 32x 1/512 1/512 for 5c	1/2 1.30 1.35 1.40	1/2 doz. 40c
1, 32x 1/1024 1/1024 for 5c	1/2 1.40 1.45 1.50	1/2 doz. 45c
1, 32x 1/2048 1/2048 for 5c	1/2 1.50 1.55 1.60	1/2 doz. 50c
1, 32x 1/4096 1/4096 for 5c	1/2 1.60 1.65 1.70	1/2 doz. 55c
1, 32x 1/8192 1/8192 for 5c	1/2 1.70 1.75 1.80	1/2 doz. 60c
1, 32x 1/16384 1/16384 for 5c	1/2 1.80 1.85 1.90	1/2 doz. 65c
1, 32x 1/32768 1/32768 for 5c	1/2 1.90 1.95 2.00	1/2 doz. 70c
1, 32x 1/65536 1/65536 for 5c	1/2 2.00 2.05 2.10	1/2 doz. 75c
1, 32x 1/131072 1/131072 for 5c	1/2 2.10 2.15 2.20	1/2 doz. 80c
1, 32x 1/262144 1/262144 for 5c	1/2 2.20 2.25 2.30	1/2 doz. 85c
1, 32x 1/524288 1/524288 for 5c	1/2 2.30 2.35 2.40	1/2 doz. 90c
1, 32x 1/1048576 1/1048576 for 5c	1/2 2.40 2.45 2.50	1/2 doz. 95c
1, 32x 1/2097152 1/2097152 for 5c	1/2 2.50 2.55 2.60	1/2 doz. 1.00
1, 32x 1/4194304 1/4194304 for 5c	1/2 2.60 2.65 2.70	1/2 doz. 1.05
1, 32x 1/8388608 1/8388608 for 5c	1/2 2.70 2.75 2.80	1/2 doz. 1.10
1, 32x 1/16777216 1/16777216 for 5c	1/2 2.80 2.85 2.90	1/2 doz. 1.15
1, 32x 1/33554432 1/33554432 for 5c	1/2 2.90 2.95 3.00	1/2 doz. 1.20
1, 32x 1/67108864 1/67108864 for 5c	1/2 3.00 3.05 3.10	1/2 doz. 1.25
1, 32x 1/134217728 1/134217728 for 5c	1/2 3.10 3.15 3.20	1/2 doz. 1.30
1, 32x 1/268435456 1/268435456 for 5c	1/2 3.20 3.25 3.30	1/2 doz. 1.35
1, 32x 1/536870912 1/536870912 for 5c	1/2 3.30 3.35 3.40	1/2 doz. 1.40
1, 32x 1/1073741824 1/1073741824 for 5c	1/2 3.40 3.45 3.50	1/2 doz. 1.45
1, 32x 1/2147483648 1/2147483648 for 5c	1/2 3.50 3.55 3.60	1/2 doz. 1.50
1, 32x 1/4294967296 1/4294967296 for 5c	1/2 3.60 3.65 3.70	1/2 doz. 1.55
1, 32x 1/8589934592 1/8589934592 for 5c	1/2 3.70 3.75 3.80	1/2 doz. 1.60
1, 32x 1/17179869184 1/17179869184 for 5c	1/2 3.80 3.85 3.90	1/2 doz. 1.65
1, 32x 1/34359738368 1/34359738368 for 5c	1/2 3.90 3.95 4.00	1/2 doz. 1.70
1, 32x 1/68719476736 1/68719476736 for 5c	1/2 4.00 4.05 4.10	1/2 doz. 1.75
1, 32x 1/137438953472 1/137438953472 for 5c	1/2 4.10 4.15 4.20	1/2 doz. 1.80
1, 32x 1/274877906944 1/274877906944 for 5c	1/2 4.20 4.25 4.30	1/2 doz. 1.85
1, 32x 1/549755813888 1/549755813888 for 5c	1/2 4.30 4.35 4.40	1/2 doz. 1.90
1, 32x 1/1099511627776 1/1099511627776 for 5c	1/2 4.40 4.45 4.50	1/2 doz. 1.95
1, 32x 1/2199023255552 1/2199023255552 for 5c	1/2 4.50 4.55 4.60	1/2 doz. 2.00
1, 32x 1/4398046511104 1/4398046511104 for 5c	1/2 4.60 4.65 4.70	1/2 doz. 2.05
1, 32x 1/8796093022208 1/8796093022208 for 5c	1/2 4.70 4.75 4.80	1/2 doz. 2.10
1, 32x 1/17592186444416 1/17592186444416 for 5c	1/2 4.80 4.85 4.90	1/2 doz. 2.15
1, 32x 1/35184372888832 1/35184372888832 for 5c	1/2 4.90 4.95 5.00	1/2 doz. 2.20
1, 32x 1/70368745777664 1/70368745777664 for 5c	1/2 5.00 5.05 5.10	1/2 doz. 2.25
1, 32x 1/140737491555296 1/140737491555296 for 5c	1/2 5.10 5.15 5.20	1/2 doz. 2.30
1, 32x 1/281474983110592 1/281474983110592 for 5c	1/2 5.20 5.25 5.30	1/2 doz. 2.35
1, 32x 1/562949966221184 1/562949966221184 for 5c	1/2 5.30 5.35 5.40	1/2 doz. 2.40
1, 32x 1/1125899932442368 1/1125899932442368 for 5c	1/2 5.40 5.45 5.50	1/2 doz. 2.45
1, 32x 1/2251799864884736 1/2251799864884736 for 5c	1/2 5.50 5.55 5.60	1/2 doz. 2.50
1, 32x 1/4503599729769472 1/4503599729769472 for 5c	1/2 5.60 5.65 5.70	1/2 doz. 2.55
1, 32x 1/9007199459538944 1/9007199459538944 for 5c	1/2 5.70 5.75 5.80	1/2 doz. 2.60
1, 32x 1/18014398919077888 1/18014398919077888 for 5c	1/2 5.80 5.85 5.90	1/2 doz. 2.65
1, 32x 1/36028797838155776 1/36028797838155776 for 5c	1/2 5.90 5.95 6.00	1/2 doz. 2.70
1, 32x 1/72057595676311552 1/72057595676311552 for 5c	1/2 6.00 6.05 6.10	1/2 doz. 2.75
1, 32x 1/14411519132623104 1/14411519132623104 for 5c	1/2 6.10 6.15 6.20	1/2 doz. 2.80
1, 32x 1/28823038265246208 1/28823038265246208 for 5c	1/2 6.20 6.25 6.30	1/2 doz. 2.85
1, 32x 1/57646076530492416 1/57646076530492416 for 5c	1/2 6.30 6.35 6.40	1/2 doz. 2.90
1, 32x 1/115292153060984832 1/115292153060984832 for 5c	1/2 6.40 6.45 6.50	1/2 doz. 2.95
1, 32x 1/230584306121969664 1/230584306121969664 for 5c	1/2 6.50 6.55 6.60	1/2 doz. 3.00
1, 32x 1/461168612243939328 1/461168612243939328 for 5c	1/2 6.60 6.65 6.70	1/2 doz. 3.05
1, 32x 1/922337224487878656 1/922337224487878656 for 5c	1/2 6.70 6.75 6.80	1/2 doz. 3.10
1, 32x 1/1844674448975757312 1/1844674448975757312 for 5c	1/2 6.80 6.85 6.90	1/2 doz. 3.15
1, 32x 1/3689348897951514624 1/3689348897951514624 for 5c	1/2 6.90 6.95 7.00	1/2 doz. 3.20
1, 32x 1/7378697795903029248 1/7378697795903029248 for 5c	1/2 7.00 7.05 7.10	1/2 doz. 3.25
1, 32x 1/14757395591806058496 1/14757395591806058496 for 5c	1/2 7.10 7.15 7.20	1/2 doz. 3.30
1, 32x 1/29514791183612116992 1/29514791183612116992 for 5c	1/2 7.20 7.25 7.30	1/2 doz. 3.35
1, 32x 1/59029582367224233984 1/59029582367224233984 for 5c	1/2 7.30 7.35 7.40	1/2 doz. 3.40
1, 32x 1/118059164734448467968 1/118059164734448467968 for 5c	1/2 7.40 7.45 7.50	1/2 doz. 3.45
1, 32x 1/236118329468896935936 1/236118329468896935936 for 5c	1/2 7.50 7.55 7.60	1/2 doz. 3.50
1, 32x 1/472236658937793871872 1/472236658937793871872 for 5c	1/2 7.60 7.65 7.70	1/2 doz. 3.55
1, 32x 1/944473317875587743744 1/944473317875587743744 for 5c	1/2 7.70 7.75 7.80	1/2 doz. 3.60
1, 32x 1/1888946635551175487488 1/1888946635551175487488 for 5c	1/2 7.80 7.85 7.90	1/2 doz. 3.65
1, 32x 1/3777893271102350974976 1/3777893271102350974976 for 5c	1/2 7.90 7.95 8.00	1/2 doz. 3.70
1, 32x 1/7555786542204701949952 1/7555786542204701949952 for 5c	1/2 8.00 8.05 8.10	1/2 doz. 3.75
1, 32x 1/15111573084409403899904 1/15111573084409403899904 for 5c	1/2 8.10 8.15 8.20	1/2 doz. 3.80
1, 32x 1/30223146168818807799808 1/30223146168818807799808 for 5c	1/2 8.20 8.25 8.30	1/2 doz. 3.85
1, 32x 1/60446292337637615599616 1/60446292337637615599616 for 5c	1/2 8.30 8.35 8.40	1/2 doz. 3.90
1, 32x 1/12089258467527523199232 1/12089258467527523199232 for 5c	1/2 8.40 8.45 8.50	1/2 doz. 3.95
1, 32x 1/24178516935055046398464 1/24178516935055046398464 for 5c	1/2 8.50 8.55 8.60	1/2 doz. 4.00
1, 32x 1/48357033870110092796928 1/48357033870110092796928 for 5c	1/2 8.60 8.65 8.70	1/2 doz. 4.05
1, 32x 1/96714067740220185593856 1/96714067740220185593856 for 5c	1/2 8.70 8.75 8.80	1/2 doz. 4.10
1, 32x 1/193428135480440371187712 1/193428135480440371187712 for 5c	1/2 8.80 8.85 8.90	1/2 doz. 4.15
1, 32x 1/386856270960880742375424 1/386856270960880742375424 for 5c	1/2 8.90 8.95 9.00	1/2 doz. 4.20
1, 32x 1/773712541921761484750848 1/773712541921761484750848 for 5c	1/2 9.00 9.05 9.10	1/2 doz. 4.25
1, 32x 1/1547425083843522969501696 1/1547425083843522969501696 for 5c	1/2 9.10 9.15 9.20	1/2 doz. 4.30
1, 32x 1/3094850167687045939003392 1/3094850167687045939003392 for 5c	1/2 9.20 9.25 9.30	1/2 doz. 4.35
1, 32x 1/6189700335374091878006784 1/6189700335374091878006784 for 5c	1/2 9.30 9.35 9.40	1/2 doz. 4.40
1, 32x 1/12379400670748183556013568 1/12379400670748183556013568 for 5c	1/2 9.40 9.45 9.50	1/2 doz. 4.45
1, 32x 1/24758801341496367112027136 1/24758801341496367112027136 for 5c	1/2 9.50 9.55 9.60	1/2 doz. 4.50
1, 32x 1/49517602682992734224054272 1/49517602682992734224054272 for 5c	1/2 9.60 9.65 9.70	1/2 doz. 4.55
1, 32x 1/99035205365985468448109544 1/99035205365985468448109544 for 5c	1/2 9.70 9.75 9.80	1/2 doz. 4.60
1, 32x 1/198070410731970936896219088 1/198070410731970936896219088 for 5c	1/2 9.80 9.85 9.90	1/2 doz. 4.65
1, 32x 1/396140821463941873792438176 1/396140821463941873792438176 for 5c	1/2 9.90 9.95 10.00	1/2 doz. 4.70
1, 32x 1/792281642927883747584876352 1/792281642927883747584876352 for 5c	1/2 10.00 10.05 10.10	1/2 doz. 4.75
1, 32x 1/1584563285855767495169752704 1/1584563285855767495169752704 for 5c	1/2 10.10 10.15 10.20	1/2 doz. 4.80
1, 32x 1/3169126571711534990339505408 1/3169126571711534990339505408 for 5c	1/2 10.20 10.25 10.30	1/2 doz. 4.85
1, 32x 1/6338253143423069980679010816 1/6338253143423069980679010816 for 5c	1/2 10.30 10.35 10.40	1/2 doz. 4.90
1, 32x 1/12676506286846139961358021632 1/12676506286846139961358021632 for 5c	1/2 10.40 10.45 10.50	1/2 doz. 4.95
1, 32x 1/25353012573692279922716043264 1/25353012573692279922716043264 for 5c	1/2 10.50 10.55 10.60	1/2 doz. 5.00
1, 32x 1/50706025147384559845432086528 1/50706025147384559845432086528 for 5c	1/2 10.60 10.65 10.70	1/2 doz. 5.05
1, 32x 1/101412050294769119690864171056 1/101412050294769119690864171056 for 5c	1/2 10.70 10.75 10.80	1/2 doz. 5.10
1, 32x 1/202824100589538239381728342112 1/202824100589538239381728342112 for 5c	1/2 10.80 10.85 10.90	1/2 doz. 5.15
1, 32x 1/405648201179076478763456684224 1/405648201179076478763456684224 for 5c	1/2 10.90 10.95 11.00	1/2 doz. 5.20
1, 32x 1/811296402358152957526913368448 1/811296402358152957526913368448 for 5c	1/2 11.00 11.05 11.10	1/2 doz. 5.25
1, 32x 1/1622592847176305915053826768896 1/1622592847176305915053826768896 for 5c	1/2 11.10 11.15 11.20	1/2 doz. 5.30
1, 32x 1/3245185694352611830107653537792 1/3245185694352611830107653537792 for 5c	1/2 11.20 11.25 11.30	1/2 doz. 5.35
1, 32x 1/6490371388705223660215307075584 1/6490371388705223660215307075584 for 5c	1/2 11.30 11.35 11.40	1/2 doz. 5.40
1, 32x 1/1298074277401044732043061415168 1/1298074277401044732043061415168 for 5c	1/2 11.40 11.45 11.50	1/2 doz. 5.45
1, 32x 1/2596148554802089464086122830336 1/2596148554802089464086122830336 for 5c	1/2 11.50 11.55 11.60	1/2 doz. 5.50
1, 32x 1/5192297109604178928172245660672 1/5192297109604178928172245660672 for 5c	1/2 11.60 11.65 11.70	1/2 doz. 5.55
1, 32x 1/10384594219208357856344491211344 1/10384594219208357856344491211344 for 5c	1/2 11.70 11.75 11.80	1/2 doz. 5.60
1, 32x 1/20769188438416715712688982422688 1/20769188438416715712688982422688 for 5c	1/2 11.80 11.85 11.90	1/2 doz. 5.65
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to risk losing the ship, you'd better fly it early in the morning or just before dark in the evening. The rubber will take up to approximately 100 turns. Try to put the winds in as fast as possible and let the model go. In this way she will have more power and a steeper climb. Happy thermals!

## Build This "Dragon Fly" Gas Job

(Continued from page 53)

the two bottom ones on first. Bend them up to conform with the dihedral of the wing. Take one wing panel at a time and hold it firmly in place against the center section at the correct dihedral angle. Hold the panel tightly against the fittings.

Using a small tool with a sharp point, mark the fittings, then remove and drill them. Replace them along with the top fittings and repeat the procedure.

Take your time and make sure that the wings have the proper dihedral and are in line when bolted down. Wings and center section are entirely silk covered, and doped with two coats of a good grade of clear dope.

#### TAIL AND PROP

**T**HE STABILIZER is of full cantilever construction. The ribs are plotted from the basic rib section on Plate 3. The spar is 3/16" by 1/2" hard balsa, and is boxed to give strength and rigidity the same as the wing spar structure.

Drag trusses of 1/8" by 1/4" stock are used to prevent warping. The leading edge is 3/16" sq. balsa: the trailing edge is 1/8" by 1/2" balsa cut from 1/8" sheet. It is in two pieces, the intersection point being at rib No. 3 from the root. Covering of 1/16" sheet balsa is added, following the outline on the drawing.

The stabilizer is located with its underside resting on top of the main stringer at zero angle of incidence. The rudder is built in much the same manner except that it is entirely covered with 1/16" sheet balsa. The material for the spar, leading and trailing edges, and ribs, is exactly the same as for the stabilizer.

The front of the rudder is offset 2° to the left to compensate for the propeller torque. The solid balsa tab on the rudder is very important in the performance of the ship. It can be attached in any desired way so long as the hinge is stiff enough to hold the tab in position under pressure of the prop wash.

The prop is one part of a gas model that many builders have difficulty in making, therefore I would suggest that you consult your dealer about a ready-made prop to match the en-

gine you are planning to use. A 14" hardwood prop with 7" pitch would be about right.

#### MOTOR AND TEST FLIGHT

**T**his SHIP is designed for any of the standard 1/5 or 1/6 h.p. motors.

The test flight should be made by hand-gliding the ship without power. Make the balance slightly nose heavy. When the glide is nicely adjusted, raise the rear of the motor about 1/16" to give it negative thrust.

Shift the rudder tab about 1/8" to the right (looking from the rear of the ship) for the powered flight. Never push it to the other side of the rudder, or the *Dragon Fly* will spiral dive. Move it *only slightly* each time until the ship flies in a broad climbing turn.

Allow only enough gas for a ten or twenty second power flight until you know just what your ship will do. And now she's yours—write to me in care of the editor of *FLYING ACES* if you have any problems I might help you solve.

## Answers

### TO QUESTIONS ON PAGE 30

- 1—The new Aeronca KC is powered with the Continental A-40 engine.
- 2—A private pilot must have 50 hours of solo flying, whereas the amateur ticket requires but 25 hours. The private pilot may fly a ship carrying passengers if there is a licensed transport or limited commercial pilot aboard and if the plane has dual controls. Private pilots may not carry passengers or give instruction for hire.
- 3—The Porterfield plane is manufactured by the Porterfield Aircraft Company, at Kansas City, Mo.
- 4—The Monocoupe 90-A uses the dual wheel control system.
- 5—The last quotation on the Waterman Arrowbile was \$2,990.
- 6—In the Taylorcraft the pilot and passenger sit side-by-side, and this ship is equipped with dual wheel control. The Taylor Cub, on the other hand, uses the tandem seating arrangement and stick control.
- 7—The Arrow F made by the Arrow Aircraft Corporation, of Lincoln, Neb., uses a converted Ford V-8 engine.
- 8—The Le Blond and Lambert engines.
- 9—Solid spruce is the most popular wood used in light plane wings today.
- 10—The average top speed of the American light planes using the Continental A-40 engine is 85 m.p.h.







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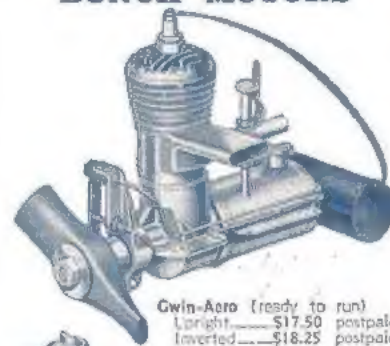


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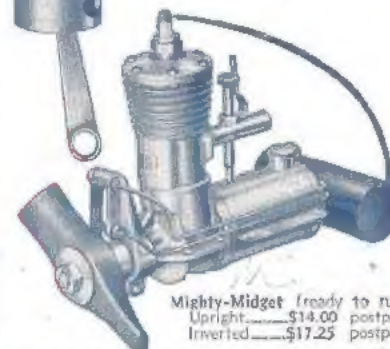
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